ELECTRICAL WORLD

A consolidation of Electrical World, Electrical Engineer and American Electrician

What in the World!

The electrical manufacturers have had their code approved. Wholesalers will present and contractors have submitted their codes for hearings. This sets the stage for industry self-government. But a sharply contrasting point of view is evident in each of these codes. There must be conciliation and reconciliation before proper operation will be had.

●

Light up America! This is the fall program for the electrical industry. The cause is worthy, and if anything electrical can be sold it is light. It has value, allure, customer appeal and involves no enormous outlay for sales or installation. The campaign should produce a very valuable block of business for all participants.

●

Our new make-up stresses editorials. All readers will not agree with our editorial sentiments and we invite their pro and con comment. We believe this is a period of need for strong, yet sound, opinions to guide the industry. We need and solicit reader aid in developing these opinions. Fair and open discussions make for progress.

●

Convention season is at hand. The programs should be very valuable in this period of flux and change. We expect to report most of these meetings and will present all material that we believe to be interesting and valuable to our readers. Sample papers we have read stand out for their valid and serious discussion of industry problems. We hope the conventions will bring out full discussions. These are needed to help avoid blind alleys in attempts to go forward.

●

Inertia is giving way to action. Business is picking up. Plans are being put to work. This is the pulse we feel in all parts of the electrical industry. May it beat faster and stronger in the coming days.

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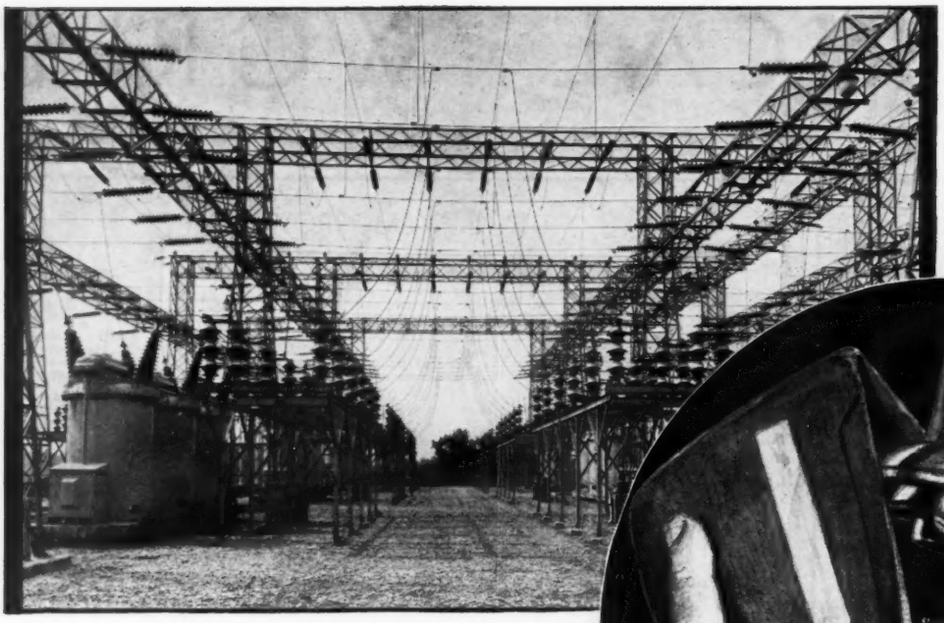

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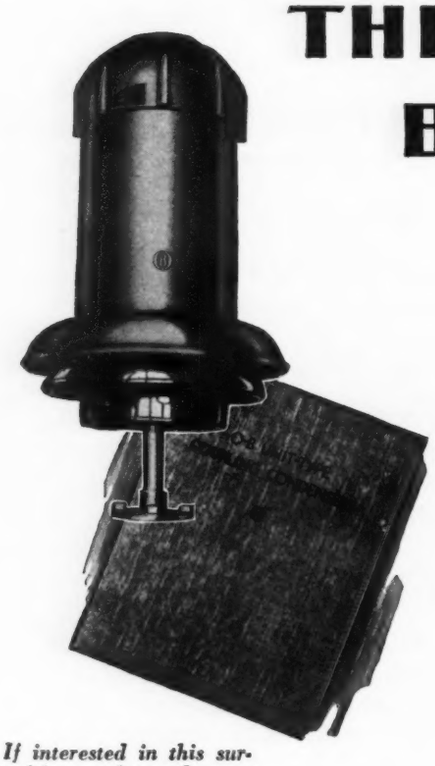

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ELECTRICAL WORLD

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L. W. W. MORROW, *Editor*

Now we will begin to light

UNDER the slogan "Better Light—Better Sight" workers of the electrical industry have embarked upon an intensive national campaign to sell higher standards of illumination. This is a commendable cause and purpose. Nothing could be quite so certain as the innate desire of human beings to see in comfort, work in comfort, relax in comfort. Even the amœba follows pleasure-pain stimuli, and mankind, with mixed motives, does little less. Clear vision is a fundamental urge. Why lighting has been hard to sell, and albeit has been hard to want to sell, is more a problem in psychology than economics.

Lessons of the past should be heeded in this campaign. Too frequently efforts to sell lighting have degenerated into intensified sales of lamps which would otherwise have extended over longer periods of time and which provided little net gain in improving standards of lighting. Even Light's Golden Jubilee was a flash in the pan. These disappointing results were the fault of the method and not the fault of the cause. But now, at last, the industry has made up its mind to sell lighting. It is awake to its opportunity and aware of its obligations.

America is fairly well lighted; certainly not much more than that. Everywhere that people work or play, travel or live are to be found places where to use one's eyes is to subject them to the strains of glare, inadequacy, faulty directionalism and defective placement, to say nothing of æsthetic torture or handicaps to mobility. Not that there is no good lighting, but that there is far too little of it. Not that there is no knowledge of what could, should and will be done to improve the lighting, but that no one has persistently, confidently and intelligently tried to tell the people the facts of light and thus persuaded them to use it.

If the altruism of "Better Light—Better Sight" is to be translated permanently by the electrical industry into the practical motivation of avoiding the tax collector and the sheriff, it will have to be education that does it. Education by the spoken and printed word. Education—not propaganda. Education—not lamp sales. Education that means the cultivation of light consciousness to the point that the dear treasures of the family budget and the business budget are directed willingly toward more light and better light.

Every attempt at selling better lighting to America heretofore has proved impotent because it was not sufficiently ambitious either as to scale or concept. Only now has the industry itself become sufficiently inspired to put the necessary intelligence, enthusiasm and organization into the program. Only now has it learned that extrinsicality must replace intrinsicality in its approach to the public. America can be sold more and better lighting, just as it has been sold automobiles, refrigerators and radios, but it must be made to want adequate lighting on an adequate scale by adequate efforts. This is the conception; this is the purpose, and this is the necessity, that promises permanent results from the present program and calls for its enthusiastic support by each branch of the industry.

Revolt against smoked glasses brewing

Believe it or not, smoked glasses are much too extensively used equipment in commerce, industry and other pursuits where seeing ability is important. Thousands of employers in effect provide their employees with smoked glasses each morning and do not allow them to remove them until they leave. Industrial workers who must turn out quality products, with small spoilage, without accidents and with no lost time are frequently provided with extra-dense smoked glasses.

Merchants who have window or counter displays figuratively station dispensers of smoked glasses outside their doors, where they nab all prospective customers and fit them with these "aids" to vision. Consider how effective smoked glasses have been found in helping customers to select merchandise. These optical "aids" to customers have done their share in fixing the amount of merchandise returned because it could not be examined carefully when purchased.

Many schools, or the taxpayers who support them, have found it an "economy" measure to equip their students with smoked glasses so they can study more easily. Even municipalities, or again the taxpayers who pay for government expenditures, make automobile drivers and pedestrians wear smoked glasses when on the street at night.

With the exception of some employers or public groups which have refused to follow this age-old custom of wearing smoked glasses on all occasions, the practice is nation-wide. The strange thing is that if you inquire why these practices prevail few can answer, and yet every employer or public group which is continuing the same levels of illumination that have been used for years past continues this practice. In every place where there is inadequate lighting smoked glasses are figuratively being imposed on occupants, workers and travelers.

In the past three years there has been an increase in the imposition of smoked glasses on the population of the world, but if every one in the electrical industry and any one interested in the seeing-ability will join in the national co-operative effort which starts October 1 to bring about *better lighting* and *better sight,* we may experience a release from the economic impediments of poor lighting in home, office, factory, store and on the street. The principal objective of the fall campaign should be to remove the smoked glasses.

Light up the factories

In American factories power is abundantly utilized. For the average worker there is more than four horsepower of motor capacity. This figure has been quoted often and, in spite of the railings against the mechanization of industry and the consequent displacement of labor, it is still something of which we can be proud. But another application of electricity in American industry exists of which we should be profoundly ashamed. This is lighting.

Four horsepower equals 2,972 watts. To handle these 2,972 watts of power the worker is supplied with an average of 0.63 watt per square foot of working space for light to see what he is doing. This is equivalent to about 2.5 foot-candles average light intensity on his work. Recommended light intensities for various operations and industries range from 5 to 10 foot-candles for rough work up to 200 or 300 for exacting jobs. As research in light and vision proceeds and field investigation produces more data the tendency is for preferred levels of light intensity to be stated in higher and higher figures. Therefore, if all factories were now adequately lighted according to present standards they would be inadequately lighted tomorrow when standards will be higher. Perhaps this is the reason why today's industrial lighting is so deplorably poor.

But we don't believe that factory operators have any such thought as this in their minds. More probably the reason for poor industrial lighting is that factory operators have not been told often enough and forcefully enough that good lighting is a good investment. That's the job of the people who have lighting to sell. The averages of 0.63 watt per square foot of lighted area and of 2½ foot-candles of light intensity in comparison with 2,972 watts per worker for power do not loom very large. In truth, this is not an allowable comparison, but the juxtaposition of 0.63 watt for lighting and 2,972 watts for power —one to 4,717—is striking enough to have some meaning. Generous with electricity for power, but niggardly with it for lighting. Somebody has got a lot of selling to do.

THE WEEK

Utility Consumers' Safeguard Asked as Power Code Waits

NOT even accorded the dignity of a hearing date, the electric light and power code has entered the silences. After the first flurry of excitement following its submission to NRA (ELECTRICAL WORLD, August 12, page 193, and August 19, page 225) the E.E.I. proposal gained little attention in Washington or elsewhere. Many, if not most, of the light and power companies have agreed to sign and under the PRA terms fly the Blue Eagle. Resignation of Dudley Cates, assistant administrator, who was to have handled this code, is rumored to have been impending some time before his departure and one hears that the utility code may be given more active attention shortly.

Consumers' clause asked

Gov. Paul V. McNutt of Indiana has asked President Roosevelt to include a consumers' clause in the proposed public utility NRA code. Such a clause, he declares, would prevent utilities from using increased operating costs due to code provisions as an excuse for increasing rates or for refusing rate reductions where they are due.

The Governor sent a telegram to the President which followed closely upon the heels of a similar request sent to Gen. Hugh Johnson, Recovery Act administrator, by Sherman Minton, public counsellor with the Indiana Public Service Commission. The messages of both charged that utilities seek to forestall rate reductions on grounds that the Recovery Act will result in increases in their operating expenses.

In his telegram the Governor said: "Obligations to several thousand users of public utility services in Indiana have impelled Sherman Minton, public counsellor on rate matters, to counsel with General Johnson and NRA on the need for a consumers' clause in public utility codes since additional operating costs are pleaded by signatories as reasonable excuse to deny rate reductions. In view of your sound position on utility questions and the unselfish patriotic objective of NRA, I cannot believe a public utility code is sound which does not include the consumer element. Justly due rate reductions would add to purchasing power of the family. Re-employment should be at expense of utility owners as it is with other industries. I heartily subscribe to the representations by Indiana public utility counsellor."

Chairman Paul A. Walker of the Oklahoma Corporation Commission asserts the commission expects patriotic support for the NRA from public utility managements and holding companies. He said: "Utilities should be willing to make any necessary sacrifices for the country's welfare. The proper basis for utility returns, eliminating unjustifiable claims for intangibles, gives considerable leeway for utility absorption of increased payrolls and warrants prompt co-operation with NRA and probably further reduction in rates."

Other codes pending

National Electrical Wholesalers Association has prepared a code for its industry and this has been submitted for preliminary hearings without as yet, however, being definitely so scheduled.

The lighting equipment industry, through the Artistic Lighting Equipment Association, has submitted its code, which has received preliminary hearings and waits NRA action.

Wholesalers Code Presented

Into the mills of NRA goes the code of the National Electrical Wholesalers' Association. Approved by the two recent conventions of this industry group, in Del Monte, Calif., and Buffalo, N. Y., and smoothed by association officers, it is ready for preliminary or final hearings by NRA. It has not as yet been scheduled for either appearance. Notable is the declaration of unfair trade practices incorporated.

I. Definitions—(a) For the purposes of determining the application of this code the term "Electrical Wholesaling Industry" as used herein is defined to mean the selling of electrical commodities by a person, firm or corporation, performing the functions hereinafter mentioned and a portion of whose sales are made at wholesale to dealers for resale; to electrical contractors; to steam and electric railroads; to steamship companies; to federal and state governments and municipalities and subdivisions thereof; to public utilities; to industrial companies which have electrical maintenance departments, and to manufacturers requiring electrical materials in the fabrication of their products.

Provided, however, such person, firm or corporation performs several or all of the following functions:

1. Maintains and warehouses an adequate stock of standard electrical commodities sufficient to supply the trade.

2. Maintains a showroom properly to display commodities for the benefit of the trade.

3. Maintains delivery service and facilities for pick-up service.

4. Maintains a selling organization trained to promote, specify and quote on electrical commodities, and properly to handle matters of service or misunderstanding with customers.

5. Distributes catalogs showing and describing the most essential items in common use in the industry.

6. Extends justified credit to the buyers within his territory upon reasonable terms.

(b) The term "Wholesaler" as used herein is defined to mean a person, firm or corporation engaged in the electrical wholesaling industry as hereinbefore defined in subsection (a) hereof.

(c) The term "Industry Commission" as used herein is defined to mean the person or persons authorized by National Electrical Wholesalers Association to assist in enforcing the provisions of this code by wholesalers in a trading area or district.

II—As required by Section 7 (a) of Title I of the National Industrial Recovery Act, the following provisions are conditions of this Code:

1. (Standard wording for all NRA provisions here used.)

III—(a) On and after the effective date of this code the places of business of wholesalers shall not be open for business before 7 a.m. or after 6 p.m. and shall be closed Saturdays, Sundays.

(b) On and after the effective date of this code all employees except such employees as are hereinafter enumerated shall be employed not more than 40 hours per week; provided, however, that these limitations as to hours of employment shall not apply when emergency, seasonal demand or inventory require more than 40 hours of work per week; in such cases such number of hours may be worked as are required by the necessities of the situation, but at the end of each calendar month every wholesaler shall report to the executive committee of National Electrical Wholesalers Association, in such detail as may be required, the number of man-hours worked in that month on account of seasonal demand or inventory, and the ratio which said man-hours bears to the total number of man-hours during said month; provided, that the foregoing provisions shall not apply:

1. To executives and administrative employees who receive more than $35 per week, and to outside salesmen.

2. To employees engaged in emergency maintenance and repair work and watchmen.

3. To teamsters and chauffeurs in the event that there be any other code which directly governs such employees.

(c) On and after the effective date of this code wholesalers shall not employ any person under the age of sixteen years.

(d) On and after the effective date of this code the minimum wage paid to employees shall be $15 per week in any city of over 500,000 population, or in the immediate trade area of such city; $14.50 per week in any city of between 250,000 and 500,000 population, or in the immediate trade area of such city; $14 per week in any city of between 2,500 and 250,000 or in the immediate trade area of such city, and in towns of less than 2,500 population $12 per week.

The foregoing provisions respecting minimum wages shall not apply, however, to office and errand boys and file clerks, whose salaries shall not exceed 10 per cent of the total payroll and to whom a minimum wage per week of not less than 80 per cent of the minimum wages hereinabove provided shall be paid. (The population of any town or city shall be computed on the basis of the United States census for the year 1930).

IV—(a) Sales prices of wholesalers shall not be less than the current published market wholesalers' cost of the particular merchandise to become effective upon the publication of such cost, plus the cost of distribution. (The cost of distribution shall include those elements of cost as used by the U. S. Department of Commerce in a study of the cost of distribution in this industry, and as are set forth in Article XI hereof); provided, that nothing in this code shall be construed to prevent any wholesaler from selling at prices equal to the currently established prices of a competitor on products of equivalent design, character, quality and specifications; and provided, further, that when a wholesaler in good faith deems it necessary to liquidate surplus, slow-moving or obsolete merchandise and proposes to offer such merchandise for sale at prices less than the lawful prices therefor, such wholesaler shall file, one week before the offering thereof, with the Industry Commission in the district in which he is located a statement showing the quantities, minimum acceptable prices and a description of the merchandise to be so offered and the reason for such liquidation. During such liquidation, stocks of such merchandise shall not be increased, and all invoices for such merchandise shall carry the following wording—

"Special prices on account of overstock."

On the 1st and 15th of each month thereafter he shall file with the Industry Commission a report showing current sales of such merchandise and the remaining quantities on hand to be liquidated.

(b) The quoting, selling or billing by wholesalers of electrical commodities at prices less than the prices in currently published suggested resale schedules of manufacturers is an unfair method of competition; provided, however, that the prices contained in such schedules are not less than the prices as defined in Article IV (a) hereof, in which event the provisions of Article IV (a) shall be applicable.

V—All quotations shall be itemized and under no circumstances shall a lump sum, other than the sum total of all items, be submitted, and where so submitted, the price of each item shall be indicated.

VI—(a) Wholesalers shall not give a discount for cash greater than the percentage of discount offered by the manufacturer of the products invoiced, and no discount shall be allowed on accounts remaining unpaid after the 10th of the month following the date of shipment. Terms for net sales should not exceed 30 days from day of shipment.

(b) No extra discount for anticipation of payment shall be allowed.

(c) No cash discount shall be allowed where payment of an invoice is made by warrant, note or trade acceptance, or where there is an unpaid balance due, unless such balance is due to and confined to items in dispute.

VII—Wholesalers shall not consign merchandise nor make conditional sales thereof to the trade, excepting where it is the universally practiced policy in this industry, as in the case of the distribution of Mazda lamps.

VIII—It shall be deemed an unfair method of competition for a wholesaler in selling an electrical commodity to permit or allow the manufacturer thereof to absorb directly or indirectly any of the costs of distributing such commodity as are normally absorbed in distributing electrical commodities by one performing the wholesale function.

IX—A service charge of not less than 10% shall be made on all returned merchandise when the return is acceptable to the wholesaler and is made within nine months after shipment except where the manufacturer or wholesaler is at fault.

X—Unfair Trade Practices—The following are declared to be unfair methods of competition in the industry:

1. Misrepresentation—The making or causing or permitting to be made or published any false, untrue, or deceptive statement by way of advertisement or otherwise concerning the grade, quality, quantity, substance, character, nature, origin, size, or preparation of any product of the industry.

2. Inducing Breach of Contract—Wilfully inducing or attempting to induce the breach of existing contracts between competitors and their customers by any false or deceptive means whatsoever, or interfering with or obstructing the performance of any such contractual duties or services by any such means.

3. Defamation—The defamation of competitors by falsely imputing to them dishonorable conduct, inability to perform contracts, questionable credit standing, or by other false representations, or the false disparagement of the grade or quality of their goods.

4. Commercial Bribery—Directly or indirectly to give or permit to be given or offer to give money or anything of value to agents, employees, or representatives of customers or prospective customers or to agents, employees, or representatives of competitors' customers or prospective customers, as an inducement to influence their employers or principals to purchase or contract to purchase industry products from the maker of such gift or offer, or to influence such employers or principals to refrain from dealing or contracting to deal with competitors.

5. Secret Rebates—The secret payment of allowance of rebates, refunds, commissions, or unearned discounts, whether in the form of money or otherwise, or secretly extending to certain purchasers special services or privileges not extended to all purchasers under like terms and conditions.

6. Enticing Employees—Wilfully enticing away the employees of competitors with the purpose and effect of unduly hampering, injuring, or embarrassing competitors in their business.

7. Espionage — Securing information from competitors concerning their businesses by false or misleading statements or representations or by false impersonations of one in authority.

8. Defacing Merchandise — The distribution and sale of any electrical supplies from which the name plate, serial number or other identifying mark of the manufacturer has been effaced or removed.

9. False Invoices—Withholding from or inserting in the invoice statements which make the invoice a false record, wholly or in part, of the transaction represented on the face thereof.

10. Advertising Matter—In cases where a manufacturer through the medium of the wholesaler makes a charge for advertising matter and/or premiums of any nature to the dealer, the absorption by the wholesaler of such a charge.

XI—(Offers a detailed listing of elements to be included in the cost of distribution by wholesalers.)

XII—In accordance with the provisions of Section 10 (b) of the National Industrial Recovery Act, the President may from time to time cancel or modify any order, approval, license, rule or regulation issued under Title I of the National Industrial Recovery Act.

Such of the provisions of this code as are not required by the National Industrial Recovery Act to be included herein may, with the approval of the President of the United States, be modified or eliminated as changed circumstances or experiences may indicate. This code is intended to be a basic code for the electrical wholesaling industry, and study of the trade practices of wholesalers will be conducted by the executive committee of the National Electrical Wholesalers Association, with the intention of submitting from time to time additions to this code, applicable to all wholesalers.

XIII—Any wholesaler may participate in this code and any revisions or additions thereto and receive the benefits thereof by accepting the proper pro rata share in the cost and responsibility of creating and administering it, either by becoming a member of National Electrical Wholesalers Association, or by

paying to it an amount equal to the dues from time to time provided to be paid by a member in like situation of National Wholesalers Association.

XIV—In each of the recognized electrical wholesale trading areas (now 42) in the United States, as may be determined by the executive committee of National Electrical Wholesalers Association, there shall be an Industry Commission to consist of a chairman and not more than four other members, all of whom shall be appointed by authority of the executive committee of National Electrical Wholesalers Association.

Any formal complaint that the provisions of this code have been violated by any wholesaler shall be made to the National Electrical Wholesalers Association through the local Industry Commission.

The Industry Commission under the authority of the executive committee of National Electrical Wholesalers Association shall investigate or cause to be investigated the facts, and to that end may cause such examination or audit to be made as may be deemed necessary. Formal charges of a violation of this code shall be lodged with the National Recovery Administration by the local Industry Commission through the headquarters office of National Electrical Wholesalers Association.

XV—With a view to keeping the President of the United States and the Administrator informed as to the observance or non-observance of this code and as to whether the electrical wholesaling industry is taking appropriate steps to effectuate in all respects the declared policy of the National Industrial Recovery Act, each wholesaler shall prepare and file with the National Electrical Wholesalers Association, at such times and in such manner as may be prescribed, report of sales of electrical commodities in dollars, number of persons employed, wage rates, hours of work, and such other similar statistical data as the executive committee of the National Electrical Wholesalers Association may from time to time require.

The executive committee of the National Electrical Wholesalers Association may require, in such manner and at such times as it may direct, all wholesalers in a particular trading area to file their price lists with the National Electrical Wholesalers Association or the Industry Commission for such area.

Except as otherwise provided in National Industrial Recovery Act all statistical data filed in accordance with provisions of Article V shall be confidential, and the data of one wholesaler shall not be revealed to any other wholesaler.

XVI—If any wholesaler is also engaged in any other industry, the provisions of this code shall apply to and affect only that part of his business which is included in the electrical wholesaling industry.

XVII—National Electrical Wholesalers Association is hereby designated the agency for administering, supervising and promoting the performance of the provisions of this code by the members of the electrical wholesaling industry.

XVIII—(Calls for filing of names and addresses of wholesalers with National Electrical Wholesalers Association.)

XIX—A violation of any of the provisions of this code or of any approved rule, order or regulation issued thereunder shall be deemed an unfair method of competition.

XX—This code shall become effective ten days after its approval by the President of the United States.

From Industry to Consumer

With Labor Day passed, business recovery efforts definitely enter another stage. The spotlight shifts from industry to consumer. Two months is officially assumed to be a reasonable time in which to complete employer-code hearings. In the meanwhile reports of little more than lip service to the Blue Eagle will be investigated and lapses from agreed-upon co-operation disciplined. The consumer-NRA-pledge drive is under way and by September 20 "Buy Now" campaigns will be transferring dollars from consumers to purveyors in increasing volumes—if all goes as planned.

Into the NRA machinery goes Henry Ford's highly individualized monkey wrench, while the soft coal industry likewise takes a "last stand" for the right to hire and fire. Actual over-all trade volumes are close indeed to 1923-25 averages, with consumer activities above those levels and construction activities far below. Prices show little recovery strength beyond recent fluctuations, and it is there that inflation probabilities germinate. October is becoming accepted as the next time of crisis.

Figures (for the week ended August 26 and consequently excluding Labor Day lapses) show a pre-holiday decline. Carloadings off slightly. Larger losses in energy, steel, lumber and automobile production. Soft coal output up. General indexes of trade volume and prices decline sharply. Security and commodity prices, still inversely reflecting the alternate strength and weakness of the dollar in relation to gold currencies, drop off after Labor Day-bull market fails to materialize promptly.

Greek Court Holds Insull for Extradition Hearing

Legally sustaining the recent arrest of Samuel Insull in Athens, the Greek Court of Appeals has upheld the detention of the former utility magnate pending an extradition hearing. The provisional detention resulted from the request of the United States Legation for his arrest and the allegation that he had violated the bankruptcy laws of the United States (ELECTRICAL WORLD, September 2, page 294). At the hearing Mr. Insull's lawyers fought hard to have their client released on bail, but when the government prosecutor maintained that it should not greatly inconvenience Mr. Insull to remain in jail for 60 days, the court took the question under advisement. It is likely that a week will have elapsed before the United States government's application for his extradition will be submitted. This delay was ascribed by the American Legation as due to translation difficulties, but authoritative sources explained it as a desire to await the arrival of the new United States Minister to Greece, Lincoln MacVeagh, this week.

In the meantime Samuel Insull, Jr., and five other officers and directors of the Corporation Securities Company, defunct Insull investment trust, surrendered in federal court and posted bonds in the latest indictment charging them with bankruptcy frauds. Bonds already posted in the previous case in which they were charged with mail frauds were permitted to stand for the new charge.

Alabama Power Cuts Rates 23 per Cent for Home Use

Reduction in residential electric energy rates by 23 per cent has been announced by the Alabama Power Company, to be effective September 1, with Public Service Commission approval. The company serves 75,000 homes in the state, of which 8,000 are rural and suburban. Estimated savings to the public are $336,000 a year. The new rates, according to the commission, change the line charge principle and substitute therefor monthly minimum charges to include 5 kw.-hr. The lines having customer densities of fifteen customers or more will pay monthly minimum charge of $1.25 and on lines having densities of less than fifteen customers the monthly minimum will be $2. Provisions are made for lowering the minimum charges on suburban lines and transferring suburban customers to urban rate when appropriate customer densities prevail. In addition the former 10-kw.-per-mile minimum contracted capacity requirements is reduced to 5 kw. at the end of original contract period, thus reducing the annual charges on many lines as much as $90 a year.

A downward revision of the company's rates and charges to cotton ginners was also ordered last week by the Alabama Public Service Commission—a revision expected to save the 275 ginners served by the utility approximately $35,000. A further saving was offered ginners in the commission's order instructing the company to grant a 5 per cent discount for prompt payment of bills.

Coming Meetings

Rocky Mountain Electric Association—Santa Fe, N. M., September 11-13. George E. Lewis, Gas and Electric Bldg., Denver, Colo.

International Association of Electrical Inspectors—Chicago, Ill., September 11-14. V. H. Tousley, 612 No. Michigan Ave., Chicago.

National Electrical Exposition—New York, N. Y., September 20-30. Ralph Neumuller, 480 Lexington Ave., New York.

American Welding Society—Detroit, Mich., October 2-6. M. M. Kelly, 29 West 39th St., New York.

National Safety Congress, Public utilities section—Chicago, Ill., October 2-6. C. B. Boulet, Wisconsin Public Service Corp., Milwaukee, Wis.

National Association of Railroad and Utilities Commissioners—Cincinnati, Ohio, October 10-13. James B. Walker, 270 Madison Ave., New York.

Association of Iron and Steel Electrical Engineers—Pittsburgh, Pa., October 17-19. John F. Kelly, Empire Building, Pittsburgh.

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Illinois Commission Asks Monthly Financial Reports

An order requiring all electric, gas and other utility operators in Illinois to furnish the state Commerce Commission with monthly reports of revenues and earnings has been issued. Formerly the regulatory body required but one comprehensive annual statement.

According to Chairman Benjamin F. Lindheimer of the commission "the rule will enable us to know definitely just what effect the new rates ordered from time to time are having on the finances of the corporations. The commission will know at a glance whether the business of a particular corporation is on the increase or decrease."

The order requires that utility companies supply the commission each month with details of all transactions with affiliated companies in addition to reporting on revenues. Forms to be used by the companies are similar to those which have been in use for annual reports. Revenues are to be reported according to sources including consumers, commercial or power users.

Similar rules have been made effective previously for some time after rate adjustments were ordered.

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Oklahoma Investigation Rests on Court Decision

Briefs by all parties to the controversy have been filed with the Oklahoma Supreme Court in a case involving legality of authorization by the state Corporation Commission of salary payments from a fund appropriated by the last Legislature for special utility investigation operations during the present fiscal year.

Fate of the commission's utility rate investigation program for this year, including a contemplated investigation into electric power rates for Oklahoma, is tied up in the decision of the high court.

Several employees supposed to be paid from the special fund are seeking a writ of mandamus to force the state auditor to approve salary claims and issue warrants in payment.

The appropriations bill authorizing expenditures from the fund specified they must be with the approval of the Governor, and Governor Murray has expressly forbidden any such outlays for this fiscal year, asserting in a letter to the commissioners that expenditure of the fund in previous years accomplished nothing.

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Georgia Commission Calls State-Wide Rate Hearing

In a sweeping order the newly instituted personnel of the Georgia Public Service Commission requested that this week every electric light and power company in the state show cause why domestic and commercial electric rates should not be reduced. Appointed by the Governor to supplant a less easily influenced board, the new members have been several times warned that they must effect lower bills for consumers (ELECTRICAL WORLD, August 5, page 164, and August 12, page 196).

The order of the commission, made public by Jud P. Wilhoit, chairman, aims at both the charges for actual energy consumed and at any extra, or service charges. It cited the companies to show why "the prevailing rates for domestic and commercial electric service should not be reduced and all extra charges for services by whatsoever names they are called should not be reduced and/or eliminated."

Chairman Wilhoit estimated that the order of the commission, if it brings about any change in electric rate structures of all companies affected, would affect 90 per cent of the total number of electric customers in Georgia. Industrial and municipal customers of the power companies are not affected by the order.

Governor Talmadge has suggested that the Public Service Commission investigate a reported business arrangement of the Georgia Power Company which the chief executive said afforded "opportunity not only for unfair trade practices but also of placing electric consumers in position to be charged rates based upon excessive material costs."

The Governor said he had received "several complaints" and was "informed that the Georgia Power Company buys practically all of certain kinds of electrical equipment from one concern, which concern is owned or controlled by one of the high officials of this company."

Associated Opens Fight on Commission Order

Obtaining a writ of certiorari from Supreme Court Justice Schenck, the New York State Electric & Gas Corporation of Ithaca has taken the first step in a legal battle against the New York Public Service Commission for reducing the book value of hydro-electric plants and undeveloped power sites by more than $4,000,000. The corporation, a subsidiary of the Associated Gas & Electric System, purchased the properties in December, 1930, from the New York State Hydro-Electric Company, another subsidiary of the same system, for $6,500,000. No cash was given in exchange, but the indebtedness was recorded against the purchaser by an open account held by the Associated Corporation, the clearing house for all intercompany transactions of the system. Subsequently, this debt was wiped off the books by order of the New York Electric Company, stockholding company for the system, and the $6,500,000 listed as part of capital.

The Public Service Commission last year ordered an investigation of the corporation's accounting system and after several hearings insisted the book value of the plants and power sites be reduced to $2,750,000, the price paid for them by the previous purchaser (ELECTRICAL WORLD, April 8, page 435).

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Special Utility Tax in New York?

Delighted at the power given them in the recent special session of the state Legislature, New York City officials are casting about for ways in which to employ their newly gained right to levy taxes on virtually anything. Proposals regarding a 2 per cent impost on the gross revenues of all public utilites have been freely discussed. Franchise provisions would protect many enterprises. Legality of such taxes is disputed in utility circles.

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Newcastle, Ind., Enjoined

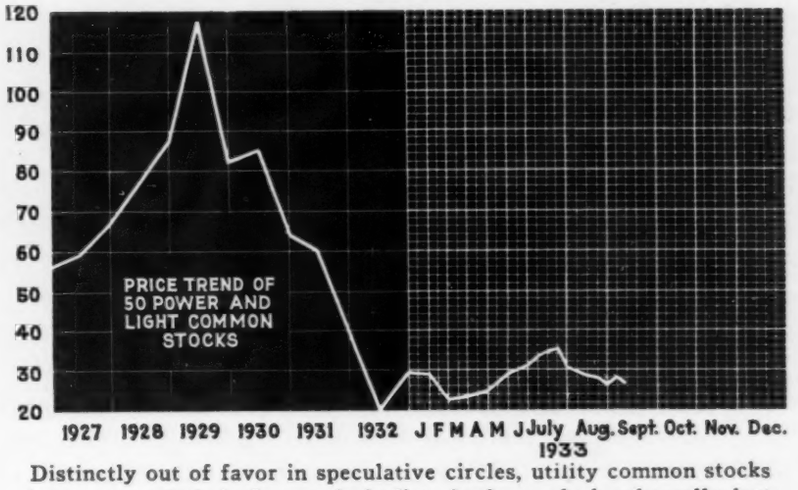
An injunction suit seeking to halt the city of Newcastle, Ind., from engaging in the manufacture and distribution of electricity to domestic and industrial users has been filed in Circuit Court there by the Public Service Company of Indiana. The question involved is one of law as to whether or not the city has a municipally-owned electric utility. The complaint sets out that the city is threatening to damage the property of the defendant by the purchase of equipment to manufacture and sell electricity and is constructing a distribution system and will take other steps to become an electric utility unless enjoined permanently.

Missouri Commission Approves Laclede Plan

Missouri Public Service Commission has authorized the Laclede Power & Light Company to issue and sell 25,000 shares of its no-par value common stock at $100 a share to reimburse its treasury and the Utilities Power & Light Corporation of Chicago for advances for expenditures for plant additions and improvements. The authorization is conditional upon the company obtaining authority from the Secretary of State to increase its capital stock. Of the $2,500,000 to be obtained through the sale of the stock the Laclede Gas Light Company, its affiliated company, proposes to use $2,200,000 to pay demand notes of the Utilities Power & Light for the advances made by that holding company.

In support of its application for the issuance of the new stock Laclede Power & Light submitted testimony that it had expended $4,257,578 for plant additions and improvements from January 1, 1927, to May 31, 1933, which had not been capitalized. The balance sheet showed that these capital expenditures included $297,953 in fees paid to the Management & Engineering Corporation, a subsidiary of Utilities Power & Light, but in the absence of further information concerning these fees the commission declined to approve them as a proper item for capitalization and would not authorize the issuance of new securities to cover these payments. This deduction reduced the improvement balance against which net capital had been issued to $3,959,625, against which the commission then authorized the issuance of the 25,000 shares of stock.

Stocks Lower in Dull Market



Distinctly out of favor in speculative circles, utility common stocks have resumed their five-week decline, broken only by the rally last week. "Electrical World" averages stand at 26.9, the lowest point since late in May; last week, 28.1.

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Alton, Ill., Suit for Funds

Seeking to recover $100,000 in fees due the city of Alton, Ill., on the sale of energy for commercial use by the Alton Light & Power Company, V. M. Jacoby, corporation counsel, has entered suit in the city court. The petition asks the court to have the power company show gross earnings and to segregate commercial heating, commercial lighting and commercial power sales of electricity over a period of years. Under a franchise granted in 1912 the city of Alton was to receive 2 per cent of the gross earnings from commercial use.

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Current Earnings Reports of Electric Light and Power Companies

Operating Companies

	1933	1932	Per Cent Increase	Operating Ratio 1933	Operating Ratio 1932
Alabama Power (Year ended July 31)					
Gross earnings	$15,379,600	$16,452,129	— 6.5	49	49
Net earnings	7,926,750	8,431,197	— 5.9	..	..
Net balance	922,434	1,511,026	—38.9	..	..
Consumers Power (Year ended July 31)					
Gross earnings	26,161,785	29,420,560	—11.0	55	50
Net earnings	11,871,930	14,728,371	—19.4	..	..
Net balance	3,046,814	6,263,184	—51.2	..	..
Georgia Power (Year ended July 31)					
Gross earnings	21,990,219	23,514,183	— 6.5	48	50
Net earnings	11,536,934	11,628,071	— 0.8	..	..
Net balance	2,424,263	2,604,778	— 6.9	..	..
Kansas City Power & Light (Year ended July 31)					
Gross earnings	14,372,873	14,667,756	— 2.0	58	57
Net earnings	5,966,372	6,290,572	— 5.2	..	..
Net balance*	3,438,664	4,200,178	—18.1	..	..
Metropolitan Edison (Year ended June 30)					
Gross earnings	10,435,799	11,311,678	— 7.7	65	65
Net earnings	3,683,440	4,016,563	— 8.2	..	..
Net balance	1,656,525	1,723,952	— 3.9	..	..
Northern States Power (Del.) (Year ended July 31)					
Gross earnings	31,152,443	33,343,614	— 6.6	60	58
Net earnings	12,361,914	14,106,921	—12.3	..	..
Net balance*	6,435,613	8,263,707	—21.9	..	..
Ohio Edison (Year ended July 31)					
Gross earnings	14,560,299	16,601,647	—12.2	49	45
Net earnings	7,487,548	9,064,735	—17.3	..	..
Net balance	1,742,878	3,547,307	—50.7	..	..
Tennessee Electric Power (Year ended July 31)					
Gross earnings	11,241,272	12,635,780	—11.0	58	58
Net earnings	4,768,967	5,319,764	—10.3	..	..
Net balance	551,522	1,206,388	—54.5	..	..

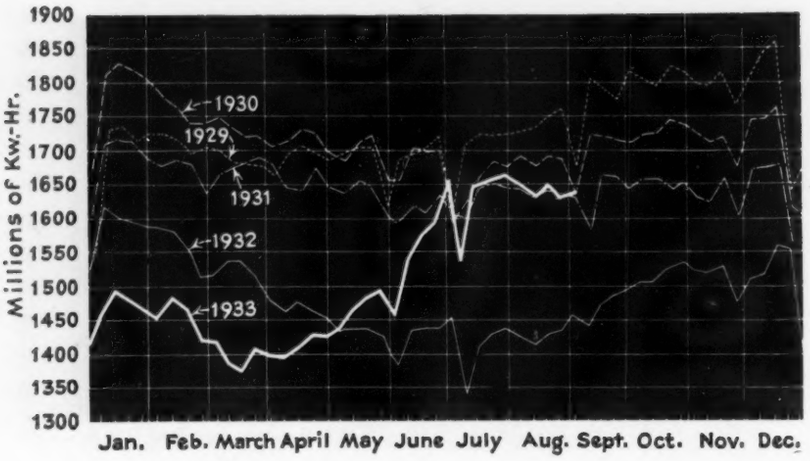
Holding Companies

	1933	1932	Per Cent Increase	Operating Ratio 1933	Operating Ratio 1932
American Gas & Electric and subsidiaries (Year ended July 31)					
Gross earnings	$62,476,945	$68,497,820	— 8.8	59	57
Net balance	7,695,591	11,565,538	—33.5	..	..
American Power & Light and subsidiaries (Year ended May 31)					
Gross earnings	73,238,043	81,582,942	—10.2	55	53
Net balance*	6,308,832	13,335,101	—52.7	..	..
American Water Works & Electric and subsidiaries (Year ended July 31)					
Gross earnings	42,294,774	46,346,182	— 8.7	55	55
Net balance	2,096,201	3,952,064	—46.7	..	..
Commonwealth & Southern and subsidiaries (Year ended July 31)					
Gross earnings	108,927,745	121,279,438	—10.2	54	53
Net balance	257,379	8,949,782	—97.2	..	..
Continental Gas & Electric and subsidiaries (Year ended June 30)					
Gross earnings	30,658,047	30,942,737	— 0.9	65	64
Net balance	1,290,535	2,845,036	—54.5	..	..
Electric Power & Light and subsidiaries (Year ended May 31)					
Gross earnings	78,347,294	85,997,228	— 8.9	56	57
Net balance	2,410,683	5,420,720	—55.5	..	..
National Power & Light and subsidiaries (Year ended May 31)					
Gross earnings	76,113,068	80,129,299	— 5.0	52	54
Net balance	8,685,475	9,443,069	— 8.1	..	..

*Available for all dividends.

Gross earnings—(Operating Companies) Gross operating revenue. (Holding Companies) Gross operating revenue plus other income. Net earnings—Earnings after deduction from gross earnings of operating expenses taken to include taxes, depreciation, maintenance, operating, etc. Net balance—Balance available from income for common stock dividends.

Energy Output Holds Same Level



Advancing less than one-half of 1 per cent from the levels announced for the previous week by the Edison Electric Institute the central station output of the country for the week ended September 2 nevertheless showed a decreasing gain over last year, due to rising output at that time. The lead over 1932 was 11.8, while in the preceding week this was 13.5 per cent. The total as announced by the institute was 1,637,317,000 kw.-hr. Regional figures showed similar trends with varying differences in the percentages.

Weekly Output, Millions of Kw.-Hr.

Week ended	1933	1932	1931	1930
Sept. 2.....	1,637	1,465	1,636	*1,630
Aug. 26.....	1,630	1,436	1,638	1,688
Aug. 19.....	1,650	1,432	1,643	1,691
Aug. 12.....	1,627	1,415	1,629	1,677
Aug. 5.....	1,650	1,427	1,643	1,692

* Includes Labor Day.

Per Cent Change from Previous Year

Region	Week ended Sept. 2	Aug. 26	Aug. 19
New England.....	+12.7	+16.5	+18.7
Middle Atlantic.....	+ 6.8	+10.2	+ 9.9
Central industrial.....	+17.4	+18.2	+20.4
West Central.....	+ 1.9	+ 3.8	+ 4.8
Southern States.....	+ 9.9	+11.6	+18.1
Rocky Mountain.....	+23.1	+27.1	+26.9
Pacific Coast.....	+ 5.0	+ 5.9	+ 9.3
United States.....	+11.8	+13.5	+15.2

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Federal Power Commission to Regulate Stream Flow

For the first time since the enactment in 1920 of the law establishing the Federal Power Commission that organization has undertaken to determine the amount which one hydro-electric power company owes to another on account of benefits resulting from the latter company's upper storage reservoirs or other headwater improvements which regulate the stream-flow advantageously to the lower plant.

The case, involving the two largest utilities on the west coast, arises from a provision of the federal power act which declares that whenever a hydro-electric project is directly benefited by upper headwater improvements of another company the benefited company shall pay an equitable share of the annual fixed charges on the improvements. The Federal Power Commission is authorized to fix the amount to be paid. Hearings began this week.

"In 1920," states an official release, "the San Joaquin Light & Power Corporation, subsidiary of the Pacific Gas & Electric Company, completed a hydro-electric power development known as the Kerckhoff plant on the San Joaquin River in California. Higher up on the river and its tributaries the Southern California Edison Company, Ltd., during the period from 1911 to 1928 constructed a number of water storage reservoirs and other works. These, and especially the Huntington, Florence and Shaver Lakes reservoirs, are alleged to be of large benefit to the San Joaquin Light & Power Corporation by temporarily holding back flood flows and later releasing them at such times as greatly to increase the amount of water available for generating electricity during periods when there would otherwise be insufficient water.

"The Southern California Edison Company, Ltd., claims that under the federal statute it is entitled to receive from the San Joaquin Light & Power Corporation $866,054, including interest, for benefits resulting during the ten years prior to 1933, and thereafter to receive annually a sum of approximately $122,000. The case is regarded as one of great importance, not only on account of the considerable amount of money involved, but because the commission's decision will determine principles for future application in similar cases in California and other States."

North Platte Power Project May Develop 38,400 Kw.

$6,200,000 of federal funds will be spent for the Seminoe Reservoir and power plant, one of two major projects to be undertaken for the development of the North Platte River Valley in Wyoming. The reservoir will be located on the main river above the Pathfinder Reservoir and the dam will be in Granite Canyon where the North Platte River runs between the Seminoe Mountains and Bennett Mountains. Studies of the site by the Bureau of Reclamation call for a dam raising the low-water level of the river 185 ft. and creating a reservoir with a capacity of 910,000 acre-ft. Studies of the power market indicate that the plant should have an installed capacity of 38,400 kw. The cost of the dam is estimated at $3,750,000, the power plant at $2,280,000 and right-of-way at $130,000.

The Seminoe Reservoir, the Bureau of Reclamation states, can be operated suitably for power purposes, with its outflow redistributed by the Pathfinder Reservoir to fit the irrigation needs. Assuming the power market at Casper, Green River and Cheyenne, the average cost per kilowatt-hour of delivered power is estimated at 4.2 mills.

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Canadian Output Up

July output of central electric stations in Canada was 1,442,660,000 kw.-hr., compared with 1,370,913,000 in June and 1,155,581,000 in July, 1932. The average daily output in Quebec last month was 26,389,000 and in Ontario 12,073,000. The export of electricity in July was 119,184,000 kw.-hr., compared with 86,673,000 in June and 59,015,000 in July.

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Battersea to Be 330,000 Hp.

Within a few weeks the two 100,000-hp. turbo-alternators comprising the first half of the Battersea station of the London (England) Power Company will probably be placed in operation. A third turbo-alternator of 130,000 hp., the largest in Europe, is already under construction for this plant. Battersea is notable for the precautions taken to avoid the discharge of smoke, fumes and ashes to the atmosphere. A $1,250,000 flue gas cleaning system (ELECTRICAL WORLD, August 5, page 166) has been installed.

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Richmond Rules on Appliances

With September 1 as the deadline, the sale in Richmond, Va., of electrical appliances not having the stamp of approval of some recognized inspection bureau will be strictly prohibited.

Boulder Line Insulators Contracted to Ohio Brass

Ohio Brass Company has secured a contract from the Bureau of Power and Light, Los Angeles, Calif., for 235,000 disk type porcelain suspension insulators for the transmission line from that city to the Boulder Dam power plant of the federal government at Boulder Canyon, Nev. Production will be carried out at the company's insulator plant at Barberton, Ohio, while malleable iron castings, approximating 325 tons, will be made at Mansfield works. Contracts for towers and conductors were awarded previously (ELECTRICAL WORLD, June 17, page 777, and August 5, page 161).

The insulator portion of the contract amounts to about $450,000. Delivery is to begin this year. Approximately 75 carloads will be delivered before January 1, 1935, under the terms of the agreement.

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Arrow-Hart & Hegeman Case to Supreme Court

Contesting the decision of the Federal Trade Commission directing its dissolution, the Arrow-Hart & Hegeman Electric Company has appealed to the Supreme Court to prevent enforcement of the commission's order. It is contended that the action of the commission would obstruct the campaign now being directed by the federal government to relieve unemployment.

The organization was formed by the consolidation of the Arrow Electric Company and the Hart & Hegeman Manufacturing Company. It claimed the purpose was to achieve manufacturing economies and improvement, and that the enforcement of the commission's order would result in throwing many persons out of employment.

This case is the first to reach the highest court to test how far it will go in waiving the Clayton act by sanctioning consolidations of concerns prohibited by that law. The Circuit Court of Appeals sustained the finding of the commission that the consolidation was illegal under the Clayton act. The company asserted the consolidation benefited the public by making lower prices and improved quality possible.

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Refrigerator Record Set in July

Sales of household electric refrigerators in July broke all records for that month, the Edison Electric Institute reports, sales of 128,317 units comparing with 28,785 in July, 1932, and 101,974 in July, 1931, the previous record. Sales for the first seven months were 794,967 units, comparing with a quota of 800,000 sales for the full year set in the industry's promotion campaign. New York led all other states in July, with sales of 25,126 units, or nearly 20 per cent of the country's total.

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Municipal Plant Not Owned Until Paid For in Missouri

According to a recent ruling of the Missouri Tax Commission municipal power plants are not municipally-owned, and tax exempt, until paid for in full. Fayette has, or is acquiring, a municipal electric plant, purchased on time payments from Fairbanks-Morse & Company, to which title is held by Fairbanks-Morse through a holding company. The commission holds the plant and equipment to be taxable and has fixed the taxable valuation at $60,000.

Fairbanks-Morse did not convey title to the city of Fayette pending payment of instalments, but holds title through the Municipal Acceptance Corporation until the machinery is paid for. Both the city and Fairbanks-Morse opposed taxation of the equipment, claiming that property owned by a municipality is exempt. After a hearing, the Tax Commission ruled that inasmuch as the property is not yet owned by the city it is taxable and assessed the taxes against the holding company.

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Oklahoma Order Creates Water and Power Bureau

For the announced purpose of providing adequate consideration of flood control, power development, river levee and lake construction, Governor Murray of Oklahoma, by executive order, has created a new Department of Waterways, Power and Flood Control, consisting of three members. Col. Clarence B. Douglas of Tulsa was chosen as chairman.

Jurisdiction of the new department is to extend to all projects where federal, state, county, district or municipal aid is furnished. The department is to cooperate especially with the Secretary of the Interior, the Reclamation Service and with Gen. Hugh S. Johnson and the NRA.

Jurisdiction shall include investigation and approval of all sites for all improvements to be made, investigation and approval of engineering plans, and of contracts awarded, all action of the project to be subject to the approval of the Governor.

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Texas Project Downed

Disapproval by the legal department of the federal public works administration at Washington has greeted the application for an RFC loan of $2,600,000 for the construction of a dam and hydroelectric plant at Red Bluff on the Pecos River and to create a water storage reservoir for supplying a number of irrigation districts near Barstow. Federal engineers approved the project which the legal division turned down.

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Major New Construction This Week

O'Fallon, Mo., has authorized fund of $250,000 for city-owned electric light and power plant.

City Transit Department, Boston, Mass., asks bids until September 19 for electrical and mechanical equipment for Boston ventilation building, traffic tunnel.

Southern Brewery Company, Tulsa, Okla., will install $200,000 of new equipment.

Bureau of Yards and Docks, Navy Department, Washington, D. C., plans improvements in power plant to cost $475,000 at Navy Yard, New York. Also two electric traveling cranes, 40-50 tons capacity, for dry dock, same yard, cost $300,000. Power plant at Portsmouth, N.H., Navy Yard to be improved at cost of $100,000. Appropriations authorized by Public Works Administration.

Richmond Brewing Company, Richmond, Ind., plans new brewery. Project will cost $600,000.

Motors, controls, electric pumps, regulators, conveyors, etc., needed for alcohol plant at Everett, Mass., of Monsanto Chemical Company, St. Louis, Mo. A $500,000 project.

Motors, controls, transformers, regulators, etc., will be installed by American Enka Corporation at rayon mill, Enka, N. C., a $500,000 undertaking.

Home Brewing Company, Inc., Canton, Ohio, to build a $200,000 plant.

Circular Refrigerators Abroad

In Germany, according to the U. S. Department of Commerce reports, circular electric refrigerators, costing only slightly more than an ordinary ice box, have been introduced. A number of advantages are claimed. The circular form of evaporator is said to insure a more even temperature in the entire cooling compartment, and the shape of the refrigerator is reported to cheapen mass production. Space capacity of the refrigerator is said to be equal to that of refrigerators of the usual shape.

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New York Metal Prices

	Aug. 29, 1933 Cents per Pound	Sept. 5, 1933 Cents per Pound
Copper, electrolytic	9.00	9.00
Lead, Am. S. & R. price	4.50	4.50
Antimony	6.875	6.875
Nickel ingot	35.00	35.00
Zinc, spot	5.12	5.07
Tin, Straits	45.35	45.625
Aluminum, 99 per cent	23.30	23.30

As to Rates——

• General Utilities Company, operating in twelve southeast Missouri towns, has reduced rates 7 per cent with the approval of the state Public Service Commission.

• Central Illinois Light Company, successor to the Illinois Power Company, has reduced rates 10 to 12 per cent in two territories which it serves in that state (Springfield suburban and DeKalb-Sycamore). The reduction became effective September 1 and does not include the absorption of federal tax as part of the saving to consumers.

• Indiana rate negotiations, under way between Sherman Minton, public counsellor with the state Public Service Commission, and officials of the Public Service Company of Indiana in connection with rate adjustments in gas and electric setups throughout the company's entire system, may be delayed as the result of the NRA program. Representatives of the company have appeared before the commission to ask that negotiations now in progress be postponed for three months until the effect of the national program on operating costs is determined. The commission had set September 11 as the date for a report. John N. Shannahan, president of the company, states it is impossible to predetermine the total increase in operating costs the national program will cause. The company, he pointed out, desires to co-operate fully with the program, but will be hard put to do so without increasing its rates. He said payroll expense alone would be increased more than half a million dollars under the proposed code for utilities.

6½ per cent fair in Missouri

• Missouri Public Service Commission, perhaps setting a precedent for future regulatory actions in that state, has ruled 6½ per cent to be a fair return on the property of the St. Joseph Water Company. Commissioner English dissented, holding 7 per cent to be the lowest rate that did not border on confiscation. Since 1925 this company has been allowed a return of 8 per cent by the commission. Since 1918 its properties have been revalued five times for rate-making purposes.

In issuing the order Chairman Collet pointed out that, the 6½ per cent rate "was probably more than business generally is earning, but when consideration is given to the fact that the average business in prosperous times ordinarily earns a much higher rate of return than allowed public utilities, the 6½ per cent figure is proper."

In a detailed discussion of "fair return," Chairman Collet said: "It is necessary that we fix a rate of return which will not only avoid confiscation of the honest investment in the company's securities and assets, but will in addition attract capital necessary for continued operation."

Commissioner Stoecker, in his concurring opinion, stated: "Capital must be content for the time being with a lesser return than it has been accustomed to."

Commissioner Hull, also concurring: "In the light of all the evidence, supplemented by an earnest inquiry into the factors by which all classes of business and enterprise are inexorably affected, we are convinced beyond all chance for doubt that 6½ per cent is a fair return for this particular utility."

Commissioner English dissenting, said: "Certainly upon the basis of security sales in the first eight months of 1932 the company would find it impossible to finance with 6½ per cent return."

Consolidated rehearings open

• New York City electric subsidiaries of Consolidated Gas Company got their wish late last week in the reopening of the $8,870,000 rate slash order of the state commission (ELECTRICAL WORLD, September 2, page 298), but met further difficulties as it was indicated that the application of the six companies might result, not in a reduction of the rate cut, but in increasing the reduction order from 6 to 10 per cent.

Mr. Maltbie and Commissioner Burritt voted for a 10 per cent cut originally, being opposed by Commissioner Brewster. Because the other two commissioners, George R. Lunn and George Van Namee, were out of the city when the vote of the six-company cut was taken, it was necessary for the two commissioners favoring a 10 per cent reduction to agree with Mr. Brewster.

It is considered likely that at the meeting of the commission following the rehearing Mr. Lunn will ask that the matter of the rate cut be reopened, so that he can have an opportunity to record his opinion. In this event it is expected that he will vote with Mr. Maltbie and Mr. Burritt for a 10 per cent cut. Should he do so a 10 per cent cut ruling will be entered.

• Queens Borough Gas & Electric Company has been ordered by the New York State Public Service Commission to reduce its rates by 18 per cent. This represents a slash of approximately $435,000. The action was part of the regulatory body's efforts to effect statewide revision of charges for electricity to bring rates in line with the depression-time incomes of consumers. As in the case of the Consolidated Gas subsidiaries reduction (ELECTRICAL WORLD, August 26, page 259) Chairman Maltbie of the commission urged a higher reduction than did other members of the commission, in this case 20 per cent.

Mr. Maltbie, in defending the 20 per cent reduction, contended that it would allow the lighting company a 6 per cent return on the book value of its stock "if adjustment of income be made for decrease of the federal income tax, which will be the result of decreasing the revenues of the company by 20 per cent." Mr. Maltbie declared that the lighting company had not been harmed by the depression and "that it has not felt the burden which has borne so heavily upon practically every other corporation." While industry, trade and commerce have suffered severely, he observed, "this company has gone right along, doubled its dividends, surplus and reserves."

In the last five years, Mr. Maltbie said, the company earned about twice the stated value of its entire common stock issue, each year showing substantial earnings in excess of a 6 per cent return. In the last ten years, he pointed out, the dividend rate upon the stated value of the common stock had never been less than 8 per cent. In 1932 the dividend was 27½ per cent, he said, and in 1931 and 1930 it was 20 per cent. In the last four years, he pointed out, dividends had totaled 90 per cent of the value of the common stock.

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French Bargees Strike

Complaining that the rapidly increasing use of electrically propelled barges is discriminatory against them, bargees plying on the canals in northern and eastern France have gone on strike. Hundreds of laden barges are lying idle in the canals, causing a serious shortage of supplies in some parts of the country. The horse barge in France is gradually being superseded by the electrically propelled craft.

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Silver Creek Project Loan

Application for a $15,700,000 loan to finance development of water power on the Silver Creek project near Sacramento, Calif., has been presented by Albert E. Given, general manager of the Sacramento Municipal Utilities District, to Frank L. Trask, of Los Angeles, engineer for NRA public works.

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Another Lightning Damage Suit

That a power company must take "reasonable precautions" to prevent damage or injury to persons and property from the effects of lightning striking its transmission wires or distribution equipment was the basis of a recent decision by Judge Hugh McIntyre of the Georgia Court of Appeals. The court affirmed an award of $1,000 damages to one who sued the Georgia Power Company for $25,000 for personal injuries claimed to have been sustained when lightning struck a transformer near his

home and jumped to his dwelling. It was claimed that the power company had not installed the proper protective equipment at the transformer. Similar decisions have been rendered in Alabama (ELECTRICAL WORLD, January 28, 1933, page 117) and Missouri (June 3, page 712, and June 17, page 784).

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Panama Canal Operated by Supervisory Control

Replacing manual operation and telephonic dispatching, supervisory control is said to have improved the operation of the electrical system at the Panama Canal, especially under emergency conditions. The entire power system is now controlled by two dispatchers, one at the Gatun hydro station and the other at Miraflores, Diesel-electric station. Concentration of control not only gives better system operation, but effects operating economies which, according to estimates, will liquidate the cost of the supervisory control equipment within three years. The supervisory control averages about 3,000 operations a month.

The Canal Zone requires an electric generating, transmission and distribution system comparable to a public utility system in an industrial area in the United States. Although the primary function of the power is to put ships through the canal, there are many other related activities requiring electricity.

Supervisory control as installed by Westinghouse therefore here provides a means for remotely controlling and supervising a large variety of power apparatus. It differs from the usual remote power control schemes in that it operates over a few small wires similar to those used for telephone purposes; the currents used are of comparatively small magnitude, and it operates over far greater distances than is practical or economical with ordinary remote control.

At Balboa substation 82 operations (with an ultimate of 92) are performed by supervisory control, including operation of circuit breakers, stopping and starting 1,500-kva. condenser, telemetering and various alarm signals. About the same number of operations are done at Cristobal substation. At Summit substation fourteen operations are performed, and the same number will be used at Gatun when the equipment is installed.

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Cleaner Sales Expansion

Between 2,000 and 4,000 retail salesmen will be employed before January 1, announces Fred Wardell, president of Eureka Vacuum Cleaner Company, to aid in Eureka's biggest drive for business, now well under way.

Municipal Items

CARUTHERSVILLE, MO., will hold an election September 12 on a proposal to issue $210,000 in municipal bonds to finance the construction of a city-owned light and power plant and distribution system. Burns & McDonnell Engineering Company has prepared plans.

HUNTINGTON, IND., City Council faces a suit to declare void ordinances appropriating money for a light and power survey filed by W. D. Hamer, former city attorney. Action by the Council abolishing the Board of Public Works is also contested, it being charged that the Council, by abolishing the board, seeks to carry out the allegedly unlawful purpose of contracting for a light plant survey.

LODI, CALIF., has by resolution of the City Council employed three consulting engineers to revise existing reports on the feasibility of proceeding with the erection of a power project in accordance with the water releases ordered in the Mokelumne River by the San Joaquin and Calaveras superior courts.

It is claimed that the erection of a power plant on the site acquired from the Colorado Power Company, 2 miles below Pardee Dam, will make it possible for Lodi to supply its own electric energy at a low rate and the releases of water ordered by the two county superior courts will also insure a plentiful supply of water in the underground basin in this vicinity.

Lodi has already entered the municipal ownership field with a publicly owned electric distribution system. Electric energy is purchased wholesale and retailed to the consumers.

RAPID CITY, S. D., commissioners have approved the issuance of a $596,066 bond issue for a municipal electric light and power plant. Voters will have their say at a special election.

SALT LAKE CITY, UTAH, citizens at hearings upon a proposed municipal light and power project (ELECTRICAL WORLD, August 5, page 169) have voiced wide differences of opinion. Plans vary from purchasing the existing plant to building a whole new system.

Opponents of the proposed municipal plant advanced these objections:

1. "Light and power rates of the Utah Power & Light Company's 'interconnected system' are below national averages and the company's service is ample and satisfactory."

2. "Grievances should be appealed to the Public Utilities Commission."

3. "Proponents of the municipal plant have not presented any definite, unbiased analysis, showing the need for a change."

4. "There is a greater public need for other types of public works than the municipal power system."

5. "A municipal plant in Salt Lake will retard electrical development for rural communities."

6. "The municipal plant would be harmful to the mining industry and hence to the entire state."

7. "The municipal plant would reduce or eliminate the Utah Power & Light Company's annual tax payment of $900,000, forcing other taxpayers to assume the burden of making up this loss in taxation revenue."

8. "The ordinance would force the city commission to enter into a 'blind' contract."

9. "The credit standing of the city would be impaired.

10. "Establishment of the municipal plant would amount to confiscation of property."

11. "The ordinance is void because it abrogates the right of contract."

12. The proposed municipal plant and system project is not fundamentally sound."

George R. Corey, power company attorney, waived the right to rebuttal argument, saying:

"The evidence submitted by the proponents was so very meager that, in so far as the Utah Power & Light Company is concerned, there is nothing to offer by way of rebuttal."

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Smoot Plant Transfers

Both the general offices and factory of the Smoot Engineering Corporation have been moved to Summit, N. J.

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Improved Refrigeration Sales

Refrigerator business of the Westinghouse Electric & Manufacturing Company for the first six months of 1933 was more than 50 per cent better than last year, R. C. Cosgrove, refrigerator manager, told jobbers, dealers and headquarters executives last week. "Our dealer and distributor relationships, our advertising budget and production plans are all being based upon an increase in business in 1934," said Mr. Cosgrove.

▼

Westinghouse August Bookings

August bookings of Westinghouse Electric & Manufacturing Company will surpass those for that month last year, states N. G. Symonds, vice-president in charge of sales. While bookings for the year to date are running about 12 per cent behind last year, Mr. Symonds estimates that by October 1 the total for the like 1932 period will have been surpassed. With August about 15 per cent ahead of July, bookings for the current quarter probably will be slightly less than $20,000,000, compared with $17,557,964 in the preceding quarter and $14,126,064 in the third quarter last year.

An Industry Drive to Develop Lighting Business

By GEORGE E. WHITWELL

Chairman Sales Committee, Edison Electric Institute

IF EMPLOYERS of office workers were asked to equip all their employees with smoked glasses and to compel them to wear them throughout their working hours would they respond? Would factory works managers ever think of forcing all their producing staff to use these optical devices? How would the public react if municipalities compelled similar usage among automobilists and pedestrians at night and among school children? What would merchants think of the proposal to station dispensers of smoked glasses on the sidewalks, where they would forcibly clamp smoked glasses on every one passing show windows and entering stores?

The idea would be preposterous, and the results disastrous. Economically, socially, physically and psychologically infinite confusion and harm would result.

Still the adherence to old-time lighting levels and particularly the lighting thrift which has been practiced in the last three years, is producing about the same results and incurring as high an expense, if not higher.

Lighting standards, which at the peak were none too adequate, have never been widely applied and have been reduced far below the point of efficiency. Due to inadequate lighting, which is a mistaken form of thrift, a depressing pall has been cast over the indoor and outdoor working and buying world; industrial and office workers are handicapped in performing their tasks; many possible retail buyers have not been attracted to merchandise displays or have been hampered in selecting purchases; a multitude of available services have escaped the public eye; the eyesight of children has been imperiled.

As a result of the lack of appreciation of proper lighting utility revenues have decreased, lighting fixture, glassware and equipment manufacturers and dealers have seen their normal business dwindle, and lamp factories report not only decreased sales, but the purchase of smaller and smaller bulbs. Contractors have suffered from the reduced call for their services.

Be prepared for October

Whether the situation is viewed from the electrical industry's standpoint or from the users of light (and they include every employer and the public as a whole), the time is opportune for a concentrated co-ordinated national drive to spread facts on the handicaps and money losses incurred by perpetuating levels of illumination which have the same effect as clamping smoked glasses on every person involved. More than this must be done. Specific suggestions must be made to users of artificial light on how they can rectify their individual conditions and utilize the composite knowledge and service available in the electrical industry.

October 1 will witness the launching of a co-ordinated activity which will have as its slogan "Better Light—Better Sight." The activity has the dual purpose, as all successful commercial activities must have, of serving the public with something it honestly needs and should have, while, at the same time, there accrues a fair profit to those who render the service. While it will be concentrated during the months of October and November, it will not be a hectic, temporary, cream-skimming campaign. The keystone of the plan is to organize and coordinate all branches of the lighting industry into local business-building groups which will function continuously to rebuild and maintain a better market for better and better lighting, better and better lighting equipment and more of both.

Those who embark upon this lighting activity will be advised to plan ahead for years instead of only for days or months. We will earnestly advise those with whom we have influence to set up permanent machinery for the development of lighting business in exactly the same way that they have set up machinery to handle other existing business. The selling of lighting is a continuous, an everlasting operation. The job will never be wholly completed.

Utilities, lighting equipment manufacturers, lamp manufacturers, wholesalers and retailers of lamps and fixtures and installing contractors will stand shoulder to shoulder in this great lighting sales activity to win back the ground lost in the depression and carry lighting standards to higher levels than ever before. All branches

of the electrical industry are invited to participate and assist locally, through co-ordinated campaigns designed to fit best each locality, in setting up a plan of procedure to further the cause of good lighting in their respective communities.

Strong local organizations imperative

Although the activity is planned on a national basis, it is intended for local development and execution. Lamp and lighting equipment manufacturers who advertise nationally will tie in their advertising with the activity during October and November. However, the major advertising and sales promotion will come from local groups in which utility, manufacturer, jobber, retailer, electric leagues and others will plan their drives to fit their own conditions.

Headquarters of the Edison Electric Institute will make available recommendations and plans which have proved practical in the field and inform on recent developments in selling in the residential, commercial and industrial fields. The E.E.I. *Lighting News* will be the official organ through which proposed plans and tried practices will be presented, but any local group which needs special help in getting organized and in laying plans for procedure is invited to seek assistance from a committee, composed of M. E. Skinner (chairman), Niagara Hudson Power Corporation, Buffalo; H. Freeman Barnes, General Electric Company, Cleveland; J. F. O'Brien, Westinghouse Lamp Company, 150 Broadway, New York, and C. E. Greenwood, Edison Electric Institute, Graybar Building, New York. Many manufacturers of domestic, commercial and industrial lighting equipment and incandescent lamps have prospectuses of plans which have been used with success; many have advertising and display material available; the man-power of many more can be called upon and relied upon for active personal service.

Preliminary local conferences

The week of September 25, immediately preceding the two-months' concentrated activity, will be Lighting Conference Week. It is hoped that during this week utilities will organize, not only in large cities but in the principal communities throughout their territory, a one-, two- or three-day conference of local interests which can meet and discuss various phases of lighting as related to the next two months' concentrated activities. In every instance where such a conference has been held in the past it has been a very effective nucleus around which to build a definite objective. By holding such meetings simultaneously throughout the United States on the subject of lighting development the effect should be even more effective. In the larger cities where lighting institutes already exist, or where electric leagues or electric associations are well organized, the meetings would logically be held there.

Four objectives in organizing

Four objectives should be sought in these lighting conferences: Leadership; attendance; appeal to self-interest; enthusiasm.

Leadership need not be limited to one man; it may be exercised by a compact committee. Two to four men in sympathy with the plan definitely assigned to duties which they are competent and willing to perform 100 per cent can do wonders in stimulating results.

Attendance should include every possible individual in the local lighting industry from the most important to its smallest member. It is important that each should be made to feel that he has a definite place in the picture and that every individual becomes a factor in the mutual success.

The program should appeal to the self-interest of every group and every individual. Contractors will want to see installation work emphasized, department store men will be interested in sales of portables, fixture men want to sell equipment and the utility wants load. Overemphasis on, or the slighting of, any interest is almost sure to result in dissatisfaction or even breakdown of the activity. On the other hand, most men will work loyally on a co-operative program when assured of a fair share of the return.

Maintaining enthusiasm is a part of leadership and essential to any co-operative movement. It is especially important to develop and maintain the enthusiasm of the lesser co-operators—the smaller contractors, lamp agents, merchants—whose participation is not great in amount, but important nevertheless in the aggregate. Definite features of the program should be arranged to appeal to these groups.

A propitious time

We believe this lighting development activity opens up perhaps the biggest opportunities the lighting industry has ever faced.

It concentrates the forces of the entire industry on a unified drive to make the nation conscious of the need for better lighting at a time when great forces are working in our favor.

October and November are the months when people are most conscious of the need for good lighting.

And this year of all years it is easier to stimulate the demand for better lighting. Business is improving, industry is expanding, purchasing power is increasing.

Co-operation already promised

Manufacturers, wholesalers, contractors and utilities have hastened to give the most enthusiastic indorsement.

Reports from utility companies which have conducted successful lighting sales operations during the depression reveal plans for enthusiastic and aggressive participation in the

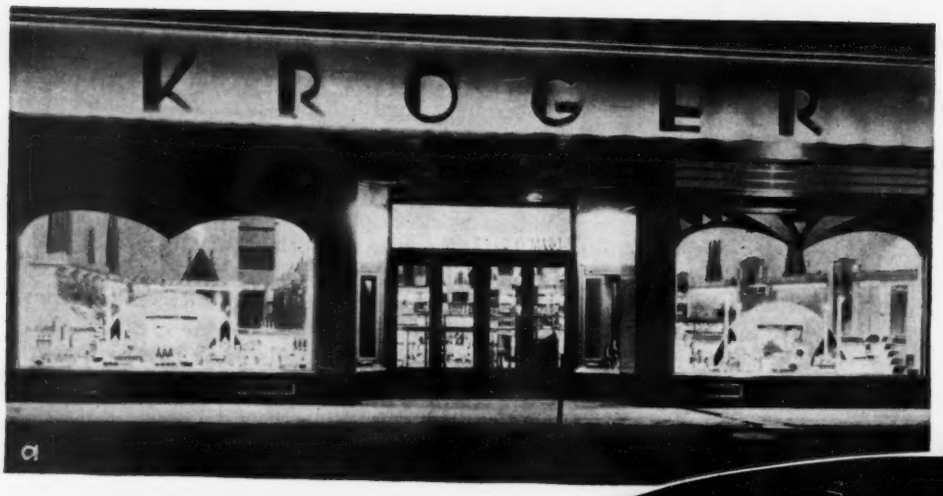
Better light, better sight activity

The National Electric Wholesalers' Association reports that the part which distributors must take in their various local districts will be outlined and arranged.

Contractors have announced that they will co-operate fully with utilities.

The success of the activity depends in large measure upon the effectiveness of local plans as worked out between the utilities and the local representatives of manufacturers, jobbers, electric leagues and retail and contracting groups. Getting organized, laying out the public approach to the objective, mutual agreement on the nature of participation are some of the problems that each local group must solve quickly. Speed in getting organized is essential, as October 1 is only a few weeks distant. Then, with a tolerant, enthusiastic, continuous participation by each member, results will be accomplished which, it is firmly believed, will exceed the fondest expectations.

Examples of Commercial



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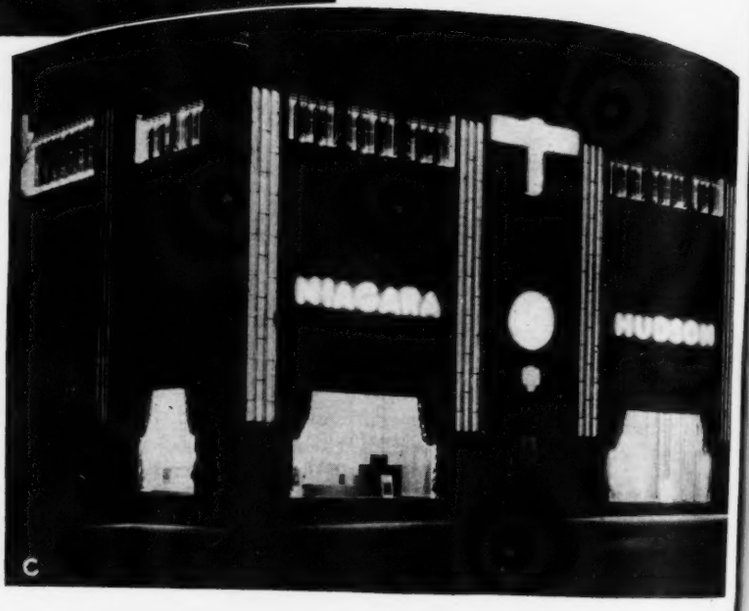

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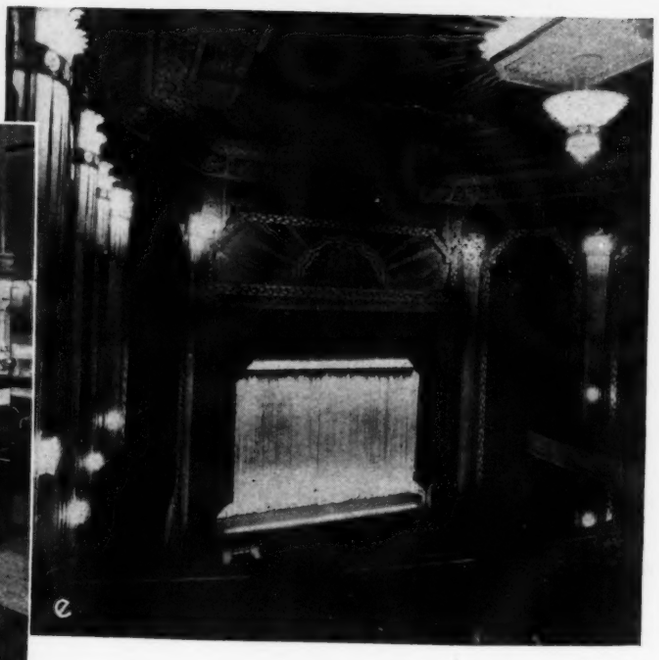
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Progress in and Street Lighting

(e) Modernistic theme dominates Boston theater auditorium lighting.

(f) Section of Broadway, Lynn, Mass., provided with Novalux units and 10,000-lumen lamps hung outside curb to give better distribution.

(g) Section of Revere-Lynn highway in Massachusetts serving as initial unit illuminated at joint expense of state and municipalities.

(h) Handicaps of thick foliage overcome by overhanging lamps.

(a) Concealed lamps illuminate store sign and windows.

(b) Built-in lighting in Los Angeles department store adds distinction without distracting attention from merchandise.

(c) Panel lighting features exterior of utility office building.

(d) Diversified units serve grocery interior without glare.

(i) Hartford Times composing room modernized by 200-watt Holophane units. This room is 124 ft. long x 48 ft. wide; contains 24 linotypes and 40 composing tables, 12 ft. long x 30 in. wide x 42 in. high. The lighting unit mounting height is 7 ft. 6 in., with 6 ft. 6 in. average spacing. Average intensity 23 ft.-candles.

Suggestions for Local Lighting Sales

By MERRILL E. SKINNER

Chairman Lighting Sales Subcommittee, Edison Electric Institute

THE nation-wide activity in lighting sponsored by the sales committee of Edison Electric Institute has already aroused a tremendous amount of interest on the part of utility companies, lamp and equipment manufacturers and all those engaged in the sale of these products. As the lighting season approaches the volume of this interest is mounting daily. In another article in this issue Mr. Whitwell, chairman of the sales committee, has outlined the important features of the program. In this article I will try to answer the question which is being raised on all sides, "What can we do about this activity locally?"

As Mr. Whitwell has pointed out, this activity is in no sense a national campaign in which every one must take a set formula and apply it locally whether the formula fits or not. On the other hand, it is intended that each community and company shall have full freedom of action to engage in exactly the form of lighting activity which best seems to fit local conditions. *The important thing is to do something.* The object of the Edison Electric Institute activity is to stimulate all phases of lighting. Local activities, therefore, need not be confined to any one field of lighting, but may cover any and all branches of the business.

The general answer to the question, "What to do locally?" is to take advantage of any local interest and develop promotional or merchandising activities which will produce sales of lighting equipment for the manufacturers and distributors, dealers and retailers and additional use of electricity for the public utility system.

In some communities advantage of the general interest in lighting is being taken to organize local co-operative committees, in this way increasing the effectiveness of each local agency by correlating the activities of all toward the common goal. The local program adopted will depend entirely upon local conditions and the extent of the present development of lighting sales agencies. It may consist of one single type of activity or a combination of a great many. The lighting field is sufficiently broad that there is room for a number of parallel activities in order to engage the interest of all those involved in the sales of products to this market. For the benefit of those who are casting about for new or additional forms of activity, I have briefly summarized some of the different types of promotion which might be selected in each of the principal lighting fields.

Home lighting offers vast market

The home-lighting field offers a vast market, for, due to the depression, people have curtailed their use of home lighting to a very marked degree. That the market is ripe for development at this time is admitted by all who are students of the subject. That the potential is enormous is borne out by the staggering totals which roll up when a small addition in each home is multiplied by the 20,000,000 such wired homes in the country. The following are some of the activities which might be engaged to stimulate the home-lighting field:

Empty Socket Campaigns—These may be either co-operative or through the utility companies, depending upon local conditions. They represent a form of activity which has been repeatedly demonstrated to be effective and are particularly appropriate today, in view of the large number of empty or reduced wattage sockets and the almost total absence of spares in the homes of the country.

Portable Lamp Campaigns—The new designs of portable indirect lamps offer some excellent opportunities for campaigning this type of merchandise. Again the campaign may be conducted by the utility organization or may be co-operatively developed to include all agencies selling this type of equipment. Department stores should have a special interest in this type of activity.

Kitchen Luminaire Campaigns—This form of activity is probably the earliest in the home-lighting field, and yet today there are many homes with inadequate kitchen lighting equipment. The recent interest in kitchen planning and modernization should make it possible to resurrect this type of activity in many communities.

Adapter Unit Campaigns—In recent years a number of very ingenious lighting units have been developed which can be suspended from a lamp socket, as in the case of the "Bettalite," or tacked up on the wall, as in the case of the "Pin-it-up" lamp. These units are inexpensive and produce a remarkable improvement in lighting conditions. Due to the small expenditure of money involved many of them have been successfully campaigned even during the darkest days of the depression.

Refixturing Campaigns—Every one is familiar with the prevalence of obsolete types of home-lighting fixtures. With the tremendous urge to get money back into circulation, it may well be possible that a refixturing campaign would have more appeal this fall than for many years past. The number of different possibilities in this field are enormous.

Home-Lighting Shows—The success of refrigerator shows, radio shows, modern home shows and other similar exhibits demontrates that when proper showmanship is used people will attend such displays in large numbers. Why not a home-lighting show, either by itself or in conjunction with a modern home show. Certainly lighting deserves more attention than it has usually received in this type of exhibition, and the fall of 1933 should be the most appropprate time to high light the subject.

Home-Lighting Schools—As soon as people appreciate the important relationship between proper lighting and eye conservation they are invariably thirsty for more information. There is a wonderful opportunity for home-lighting schools to teach the new science of seeing and how to apply this new knowledge correctly in the home. This is closely related to the old reliable form of activity, namely, lamp shade classes. Be sure in conducting these classes that the women who make the lamp shades understand the proper principles of lighting, and that it does not develop into an arts and crafts school or a sewing circle which loses sight of the lighting objective.

Lectures—Utility home service representatives have developed a tremendous following for their classes in cooking and home making. This following would be greatly interested in information in regard to proper home lighting. Make it a rule to include five minutes on home lighting in every home service class or demonstration. It breaks the monotony of continuously talking about cooking and is always interesting to those in attendance.

"The New Approach"—The same principles that have been so successfully applied in the commercial field by using a foot-candle meter demonstration are now being tried by many companies in the home-lighting field. The development of portable illuminometers, or sight meters, has progressed to a point where special models are now available for the home-lighting field. A demonstration with one of these meters is so convincing as to enlist almost invariably the active interest of the home maker to whom it is shown. This form of activity was discussed in a paper* by the writer which was presented to the E.E.I. convention in Chicago in June.

Distribution of Literature—A form of activity which is very inexpensive would be the distribution of literature on home lighting, including such items as lamp recipe charts, home-lighting booklets, etc.

Contacts with Architects—It might be worth while to revive contacts with architects and speculative builders interested in the construction of new homes or the modernization of old homes. The distribution to such people of literature such as the booklet published last year by the N.E.L.A.—"That she may have more leisure"—will supply them with information which will have a profound influence on their designs, because it brings their information on the subject right up to date.

Commercial lighting needs bolstering

The commercial lighting field has always been more intensively cultivated than the home-lighting field and today is in exactly the same condition. During the depression merchants have progressively reduced lighting intensities to the point that we have lost ground that has taken years for us to gain. The methods for developing this field are well known to most lighting service departments and by all manufacturers, distributors and sales agencies working in this field. A few of the activities might be mentioned, such as:

"The New Approach"—The use of the Weston illuminometer in demonstrating good lighting to commercial customers has been thoroughly outlined in the trade press† and in other literature covering this subject. Its effectiveness has been thoroughly demonstrated. One of the most attractive activities which could be engaged in would be the systematic coverage of all commercial customers using this new approach.

Commercial Unit Campaigns—Campaigning a specific commercial luminaire is another form of activity which has been amply demonstrated in the past to be successful.

Refixturing Campaigns—This is the extension of an individual luminaire campaign and might be undertaken co-operatively by all the agencies selling this type of equipment in a given community.

Commercial Lighting Demonstrations—Commercial lighting demonstrations before groups of local merchants have been shown to be a productive method of promotion. This can be in the form of a semi-permanent exhibit or individual lectures in which the equipment is demonstrated. Again it might be possible to feature commercial lighting in connection with other forms of exhibitions and displays.

Vacant Store Demonstrations—Many companies have successfully used demonstrations of commercial lighting in vacant stores to interest neighborhood merchants. Usually landlords are glad to co-operate because it centers attention on their vacant property and helps them lease it.

Sign Campaigns—Electric displays have fallen into a sad state of repair in many communities. A sign maintenance campaign might be productive of a large amount of business at this time. This activity might be extended to include a new sign campaign.

Industrial and miscellaneous lighting opportunities

The industrial lighting field is similar to the commercial and practically all of the forms of activities which have been outlined for the commercial field can be carried on in the industrial field. Here, too, the methods of promotion are well defined, and in most instances have been tested and proved in the field.

As pointed out previously in this article, the scope of the lighting promotion this fall is all inclusive. During the past few years there have been marked reductions in the scope and intensity of street and highway lighting in many communities. Lectures on the relation of high-

*ELECTRICAL WORLD, *page 774, June 10, 1933.*

†*See* ELECTRICAL WORLD, *page 204, February 11, 1933.*

way safety to proper lighting might be most appropriate in building back this lighting. The same may be said of outdoor lighting for sports areas and spectacular flood-lighting installations.

Another form of activity which can be carried on in every community is to secure engagements to appear before luncheons and service clubs with the story of the new science of seeing. In that connection we should not forget the outstanding demonstration of lighting at the Century of Progress Exposition. An illustrated lecture on the lighting features of this remarkable exposition would be most timely and interesting to audiences all over the country. We should not overlook in this lighting activity the opportunity which the NRA activity presents. In the first place, it has aroused a consciousness in the public mind of the necessity for putting money into circulation if prosperity is to be restored; in the second place, it has fixed the attention of industrial and commercial leaders upon the necessity of securing the maximum possible efficiency from their employees to compensate for added expense of the shorter working hours which are so generally being adopted. Proper lighting has a most important place in this picture, for—

Better light means better sight, and better sight means better efficiency.

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Guide to Better Home Lighting

THE suggestions made herein are being used by both the Brooklyn Edison and Nebraska Power companies as part of their programs to stimulate better lighting. They have been incorporated in lighting primers sent to all employees of the Nebraska company because it is recognized that whether the employees sell or not, they mingle with all strata of the communities served and when properly informed are influential in creating a better knowledge of what constitutes better lighting.

Suggestions for Those Who Reside in Apartments

Entrance Hall—This is the entrance to your home. Have it as attractive as possible. Use 40 or 60 watts in the ceiling fixture and 25 or 40 watts in lamps on the console table and telephone table.

Living Room—Light your living room for comfort and beauty. You can easily accomplish this if you will use lamps of the right wattage with properly designed shades. Use 40- or 60-watt lamps in each socket in the ceiling fixture and see that they are equipped with shades that prevent the eye from seeing the bare lamp. In wall brackets 25-watt lamps are sufficient. They should, of course, be shaded.

Portable lamps are most important. One placed by every easy chair makes it possible for a person to sit down anywhere and still be able to read. The family does not have to wait for father to finish his newspaper to have a turn at the light; 40- or 60-watt lamps in each socket will give good light for reading or sewing. A lamp placed at the left of a desk makes it possible to write without having a shadow formed by the hand.

No living room is complete without an indirect floor lamp. If the room is small and the ceiling white and fairly low a 200-watt lamp will give sufficient light. Otherwise a 300-watt lamp should be used. The shadowless, glareless light from this type of unit is unsurpassed for studying, reading music at the piano, playing bridge or working jigsaw puzzles.

Dining Room—Here again the ceiling fixture and wall brackets must be shaded to prevent glare; 25-watt lamps are needed for wall brackets and small decorative lamps. The ceiling fixture, if it is of the candelabra type, will require 40- or 60-watt lamps in each socket, properly shaded.

Another popular means of lighting the dining room is to use a dome shade over the table. It should be at least 12 in. deep and hang approximately 23 in. above the table. Be sure that people seated at the table cannot see up under the shade far enough to have the light from the bare lamps strike their eyes. The dome shade may be of cream-colored glass or of silk or parchment. It should, however, be light in color as dark colors absorb a great deal of light and leave the room dark and gloomy. If there is one socket in the fixture use a 100-watt lamp. If there are two sockets use a 60-watt lamp in each. If there are three or more sockets use 40-watt lamps in each.

The fact that children frequently study at the dining room table is an additional reason for giving especial attention to the lighting here.

Kitchen—In the kitchen there should be an abundance of general lighting throughout the entire room. It is as necessary to see on the top pantry shelf as in the lowest drawer of the cupboard. For good general illumination use a 100- or 150-watt lamp in an inclosing globe of the kitchen unit type. Many people prefer to use a daylight lamp which gives the true color value to food.

Bedroom—A fixture very commonly found in the bedroom is of the bare lamp variety. By using 40- or 60-watt lamps in each socket and employing shades on this fixture very good lighting can result.

At the dressing table plenty of light is needed. Tall dressing table lamps, bringing the light on a level with the face, should use 40-watt lamps and have light-colored shades. A bed lamp requires a 40- or 60-watt lamp. Care should be taken that the bare bulb does not shine in the eyes. A bridge or floor lamp will be needed by a boudoir chair, sewing machine or writing desk; 40- or 60-watt lamps in each socket will give the necessary light.

Bathroom—The bathroom in the average apartment is lighted in one of three ways:

1. Ceiling Light—In order to have enough light for shaving it is necessary to use a 100-watt lamp. The shade should cover the lamp and be of white glass.

2. Ceiling Light and Wall Bracket Over Mirror—When the room is lighted in this way 60-watt lamps in each unit will be sufficient. Both units require a white glass shade.

3. Two Wall Brackets, One on Each Side of Mirror—This is the best lighting for the bathroom because it concentrates the light at the mirror, where it is most needed. The face is lighted evenly from both sides; 40-watt lamps should be used in each socket. To prevent glare each bracket must be equipped with a white glass shade.

Low Cost of Lighting—On the city residential service rate do you know that—

You can use a 200-watt indirect floor lamp to light a bridge table for four hours at a cost of 4½ cents, which is what you spend for six cigarettes?

A 6-watt night lamp can be used eight hours per night for twenty nights for the price of one package of gum?

A 60-watt lamp in a bridge lamp can be used for three hours every night for two weeks for slightly less than the cost of an ice-cream soda?

Your bathroom can be lighted for an average of one hour and fifteen minutes each night for five days for the price of an evening paper?

Employee's rate reduces the cost about 45 per cent, almost in half?

Light for Safety—It is insurance against burglary to leave a light burning in the apartment when the family is out for the evening. When children are left alone this is an especially wise precaution.

Suggestions for Those Who Own Their Homes or Occupy Single or Two-Family Dwellings

Porch—A well-lighted entrance will express to the arriving guest the spirit of hospitality to be found within. The light should be located so that the steps as well as the door are well lighted. An illuminated house number makes for easy identification and can be left burning continuously for a negligible amount.

In the summer when the porch serves as an outdoor living room several good reading lamps will be needed on the porch.

The "Pin-it-up" lamp—new in beauty and design—can be purchased for a little more than $1, is portable, fastens to the wall with a small glass push pin and is ideal for porch lighting.

Entrance Hall—Here your friends get their first impression of your home. . The lighting should be for effect, to increase the beauty of the room. Make the hall mirror useful by having a lamp placed near it. At the telephone stand there should be a small lamp. The stairs, of course, must be well lighted. This is best done by means of a properly shaded ceiling fixture.

Living Room—Many activities take place in this room. The lighting must be flexible enough to meet all needs. At the same time it must be decorative and enhance the charm of the room.

The ceiling fixture and the wall brackets, all properly shaded, of course, will give general illumination. A portable lamp by each easy chair, another placed at the left of a desk and another at the piano will give the necessary local lighting. Of these portable lamps, at least one should be of the indirect type. They give a shadowless and glareless light and afford the best means of lighting the bridge table, or music at the piano. The newest use is for jigsaw puzzles. Slight variations in color can be easily detected without causing eye strain.

Dining Room—The center of interest is the dining table. Therefore a ceiling fixture is most suitable when designed to give direct light on the table. If a dome light is used it should be hung low enough so that people sitting at the table cannot see the bare bulbs; 23 in. above the table top is a good height. The candle type of fixture may be hung much higher. Use high-wattage lamps in justice to fine silver, linen and china. It is at the dining table that children often study. Therefore, additional care should be taken to provide adequate light without glare.

Local lighting on the buffet and serving table add color and decoration to the room.

Kitchen—The kitchen lighting should be carefully considered as this is the workroom of the house. A ceiling unit with a closed white glass shade and a 150-watt daylight lamp will give a good intensity of light and show the true color values of food. A 100-watt frosted lamp may be used in lieu of the 150-watt daylight lamp if color correction is not desired. In large kitchens a light over the sink is also needed so that the housewife will not work in her own shadow.

Bedroom—Care should be taken in the selection of dressing table lamps. Keep the shades light in color and have the base tall enough so that the light will be on a level with the face when one is seated at the table.

General illumination is very important here. It must be a strong light. For example, when trying on a new dress one must be able to see each detail and be sure of the fit.

A bed lamp over the bed or at the side should be provided to give plenty of light for reading. It should be placed so that the bare bulb cannot be seen. A bridge or floor lamp is required at the sewing machine or easy chair.

Bathroom—In the bathroom light should be concentrated at the mirror. Two brackets, one on each side of the mirror, will light the face for shaving, and also give adequate illumination in the room. If the room is large a ceiling light is needed to give general light in the room. White glass shades should be used in the bathroom.

A sun lamp may be installed on the ceiling near the mirror or tub. This will provide a sunbath without loss of time if used while shaving or bathing. Such fixtures should be permanently installed and controlled by a wall switch or insulated switching device, which will be proof against shock.

Furnace Room—Few basements are adequately lighted. The task of operating a furnace is much easier if it is not necessary to grope around in a dark cellar or stumble up stairs. The minimum requirements dictate a light near the furnace and another in or near the coal bin.

Laundry—The lighting should be the same here as in the kitchen. A closed white glass shade using a 150-watt daylight lamp can be mounted at the ceiling in the center of the room. Or an RLM deep bowl reflector with 150-watt frosted lamp mounted at ceiling over the washing machine will give excellent lighting. A wall bracket with a white glass shade over the tubs will prevent the necessity of working in one's own shadow.

Play Room—The ceiling of the play room is often very low. Several indirect floor lamps will give excellent lighting. Wall brackets with attractive shades will add to the decorative effect.

Rear Yard—An exterior light mounted on a corner of the house or garage will not only light the driveway but will offer considerable protection from night prowlers. It is cheap insurance against burglary. Three-way or even four-way switching will permit its operation from garage kitchen and/or bedroom.

Conclusion—In selecting shades for your fixtures and portable lamps the color and shape are important. Choose light tints, such as rose, peach or tan, and avoid dark colors, particularly blue, green or red.

All floor or table lamp shades should be open at the top to allow reflected light from the ceiling to aid in lighting the room. The greatest harm causing eye strain is when the surroundings are dark and the surface under the lamp bright. The contrast is too great every time the eyes are changed from a light to a dark area and back again. Semi-indirect or totally indirect lighting causes the least amount of eye fatigue, providing the illumination is of correct intensity. A glaring light is just as bad. Eye strain causes nervousness, headaches and fatigue, poor work and more accidents.

You can light the average living room for several hours for the cost of an average cigar.

A kitchen can be well lighted two hours each night for a week for the price of a cake of soap.

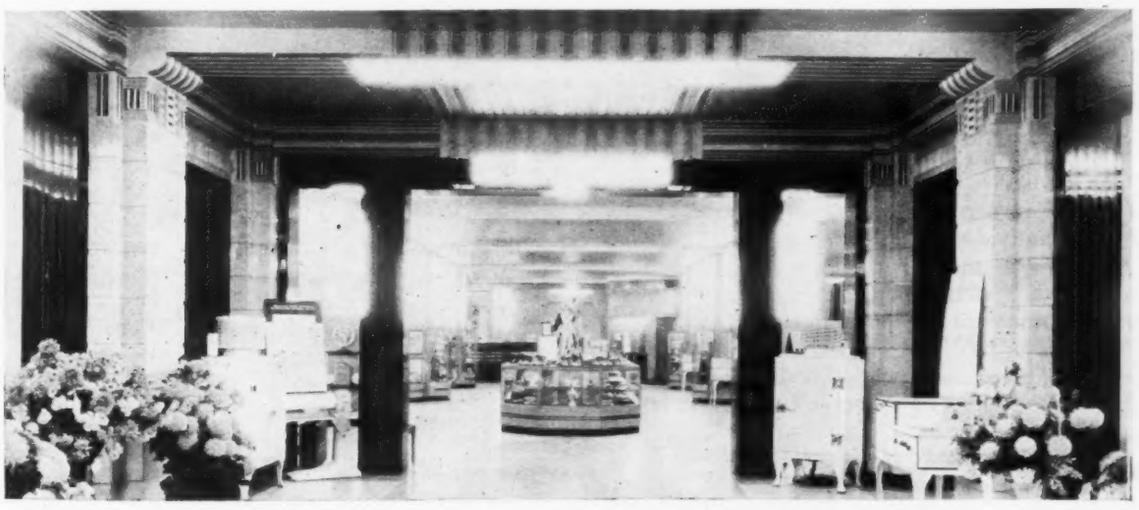


Plate lighting in remodeled store of Buffalo General Electric Company

Lighting Small Stores Holds Lucrative Possibilities

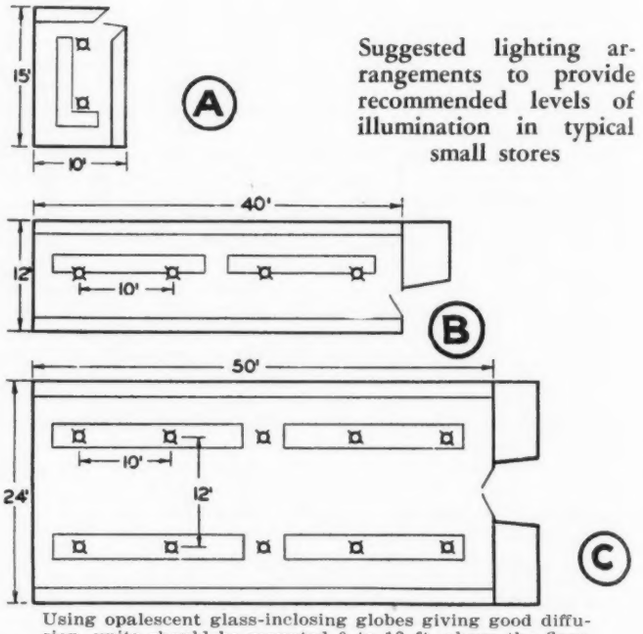
By A. L. POWELL, J. M. SMITH and A. RODGERS *

Incandescent Lamp Department, General Electric Company

DURING the last few years there have been many high-pressure selling campaigns on commercial lighting units designed to appeal to the ignorance of the user. Due to the general desire for lower costs of operation there have appeared on the market quite a flood of luminaires or accessories for which startling claims are made. The statement is generally set forth that through the use of this particular device the store owner will be able to reduce the size of lamp by one step and have the same illumination as he has been receiving. Tests on all of these devices which have come to our attention show them to have no special merit over good standard equipments. A standard practice in selling devices of this sort is the use of an extremely small globe for a given size of lamp, resulting in high surface brightness, and through this means convincing the customer that with a small size lamp he is receiving as much illumination as before. The customer is told to look at two fixtures. If one unit appears much brighter than the other, he concludes that the illumination must be as good, if not better. The typical layman's viewpoint is expressed in the oft-heard statement: "That certainly is a wonderful light, it is so bright you can't look at it." Pages might be written on various phases of the selling activities employed with some of these devices for which false claims are made. Among those which are found in considerable quantities are small 10-in. globes with high-wattage lamps, small globes with a hole in the bottom and globes with pressed crystal bottom plate or section.

Setback is only temporary

As a result of this situation one must confess that there has actually been somewhat of a regression as far as the general use of equipment which obeys the fundamentals of good illuminating engineering principles. This is to be regretted and it is to be hoped that the manufacturers of well-designed devices will institute some means of regaining this business. The large volume of business in lighting devices which have no inherent merit is a serious indictment of our industry. The large companies are competing with each other in a cut-throat manner on the big jobs, yet these small individual establishments are entirely overlooked. Every year these places have sold to them as a result of active door-to-door campaigns hundreds of thousands of luminaires at abnormally high prices. While the large purchaser has been buying good equipment at a very low figure, there are plenty of instances where small lots of these special units have been sold at prices from 20 to 30 times the manufacturer's selling price. This situation should be corrected. There is refixturing business to be had. The store with badly maintained, antiquated fittings is an easy prey for the high-pressure salesman. It is our own fault that we have not observed these conditions and corrected them with proper equipment before now.



Suggested lighting arrangements to provide recommended levels of illumination in typical small stores

Using opalescent glass-inclosing globes giving good diffusion, units should be mounted 9 to 12 ft. above the floor.
Type A, small square store—200-watt Mazda lamps; if larger than 10x15 ft. use 300-watt Mazda lamps.
Type B, long narrow store—Fair, 300-watt Mazda lamps. Good, 500-watt Mazda lamps.
Type C, full width store—Fair, 200-watt Mazda lamps. Good, 300-watt Mazda lamps.

In 1912 an extended investigation was made to determine the sort of lighting employed by the ordinary small store. Ten years later some 600 establishments of the same class were visited and data obtained as to the advance that had been made in practice. These surveys were reported in the I.E.S. *Transactions* (Vols. VII and XVII). With the passing of another decade it seemed desirable as a matter of record to conduct a similar study and two of the authors visited approximately 1,000 stores in the same category.

In this case 70 per cent of those reported were in New York and the remainder in Cleveland, Ohio. As before, the attempt was made to obtain a picture of average conditions rather than a group representing the best and most progressive establishments. The practice of the investigator was to select representative areas and then proceed to visit store after store without regard to its class for several blocks. Then other neighborhoods were treated in the same fashion. It is felt that a true cross-section is thus obtained. Precautions were taken to avoid those localities where the high-class shops or distinctive stores exist.

**Excerpts from paper No. 6, "Has the Passing of Two Decades Affected Practice in Lighting Ordinary Small Stores?" presented before the 27th annual convention of the I.E.S., Lake Delavan, Wis., August 28-31, 1933.*

On a prepared form the following items were noted and tabulated: Type of store, dimensions, height of ceiling, color of walls and ceiling, number of outlets, type of lighting equipment, mounting height, maintenance, type of interior display lighting in use, and general effect of the lighting. Similar data were also obtained on the show windows. These data were correlated and developed into the tabulations given in this paper.

Many storekeepers during the investigation volunteered the information that they formerly used 300-watt lamps where they now had 200, 200-watt instead of present 150-watt, and so on. Quite a few stated that they plan to go back to the larger lamp when business picks up. The survey revealed that, if anything the illumination was less uniform. There is a tendency to employ equipment which gives spots of highlighting rather than a more diffused distribution. Obviously, a large sampling of stores is more important than full and accurate studies of individual installations. Time was not taken in any of the surveys to insure precision in individual cases, since variations are eliminated by the statistical method.

As was found in the previous investigations, one of the most outstanding errors in installations is the placement of lighting equipment too low. The prevailing ceiling height in the stores surveyed was 10 ft. or more, with an average of 12 ft. The desirable mounting distance for the spacing employed is in the order of 9 to 11 ft. In spite of this fully 62 per cent of the stores investigated in New York City have the equipment hung less than 8 ft. high. In Cleveland, however, only 2 per cent of the stores had mounting heights of less than 8 ft. and 24 per cent less than 9 ft.

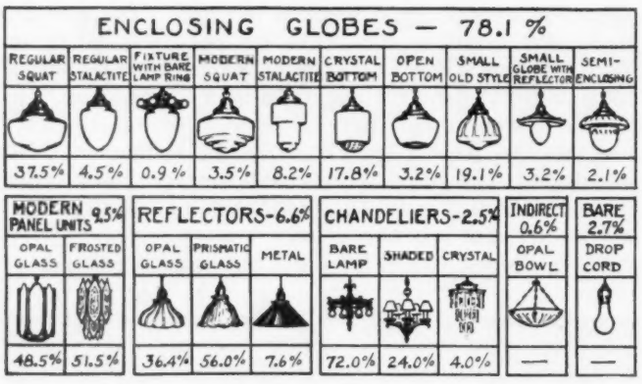
While the use of lighted show cases and floodlights in

Lighting for a women's dress shop

In this shop (17x40 ft.) an average illumination of about 8 ft.-candles is provided by three modern lighting fixtures formed of flashed opal glass panels. Each unit contains two 150-watt and three 60-watt Mazda lamps. At the front of the store a decorative touch is added by wall fixtures and torchieres of similar design using one 25-watt lamp each and every fitting room is lighted by a 60-watt Mazda lamp over the mirror.

Eight 300-watt globes provide 8 ft.-candles here

This typical combination grocery and meat store (25x30 ft.), operated by a large chain organization, employs eight standard inclosing globes with 300-watt Mazda lamps for general lighting. The illumination is approximately 8 ft.-candles. A total of twenty-one 25-watt lamps on 18-in. centers illuminate the meat cases and refrigerator window.



Extent of use of different lighting units in 1932

the store interior should afford many good merchandising possibilities, it was found that only 13 per cent of all the stores had any form of interior display lighting. About the only place where this form of lighting seems to be making any strides is in the lighted refrigerated cases in the meat markets. Illuminated counters and lighted cases were found in 90 per cent of the grocery and meat stores and in 45 per cent of the meat markets. The use of floodlights and lighted display cases was found in 20 per cent of the delicatessen stores and in 25 per cent of the bakeries. In the field of wearing apparel, 20 per cent of the shoe stores made use of lighted cases. Illuminated showcases were found in 50 per cent of the jewelry stores.

Lighting Conditions in 1932 Compared with 1912 and 1922

	1912		1922		1932							
						Watts per Sq. ft.			Foot-candles			
Store Classification	Watts per Sq. Ft. Average	Estimated Foot-Candles	Watts per Sq. Ft. Average	Foot-Candles	No. Inspected	Min.	Max.	Ave.	Min.	Max.	Ave.	Recommended
Bakery	0.8	3.2	0.9	5.7	25	0.7	1.8	1.1	2.0	10.0	5.1	12
Barber shops	1.2	4.8	1.5	6.5	33	0.8	3.0	1.7	3.0	14.0	7.8	15
Cigar	1.5	6.0	1.6	7.1	41	0.9	2.6	1.7	3.0	20.0	6.2	15
Clothing	1.4	5.5	1.2	6.0	59	0.6	5.3	1.8	2.0	25.0	8.8	15
Clothing repair	...	...	...	...	60	0.5	3.0	1.4	2.0	12.0	5.6	15
Confectionery	1.0	4.0	1.1	5.3	25	0.3	2.5	1.0	2.0	15.0	6.1	12
Delicatessen	1.1	4.4	1.1	5.7	51	0.4	3.8	1.4	2.0	15.0	7.2	12
Drug	1.0	4.0	1.0	6.0	51	0.5	2.9	1.3	2.0	16.0	7.3	15
Dry goods	1.3	5.2	1.2	5.7	28	0.3	6.1	1.4	3.0	14.0	6.3	15
Eating places	1.1	4.4	0.9	5.1	78	0.2	2.7	1.0	1.0	13.0	5.3	10
Electrical	...	...	...	...	11	0.6	3.0	1.3	2.0	12.0	7.6	15
Florist	1.1	4.4	1.2	5.0	17	0.7	5.1	1.7	2.0	13.0	6.3	12
Furniture	...	...	...	...	15	0.5	1.8	1.2	2.0	11.0	5.9	15
Gifts	...	...	...	...	17	0.5	1.8	1.1	1.0	12.0	4.5	15
Grocery	1.0	4.0	1.0	5.1	110	0.3	3.0	1.3	1.0	16.0	7.0	12
Grocery and meats	...	...	...	...	41	0.4	3.0	1.5	2.0	15.0	7.2	12
Haberdashery	1.4	5.6	1.5	7.0	12	1.6	3.6	2.1	4.0	22.0	10.2	15
Hardware and paints	...	...	...	...	59	0.4	2.5	1.0	1.0	11.0	4.8	12
Jewelry	1.5	6.0	1.3	6.4	48	0.4	4.6	1.8	2.0	22.0	9.8	15
Leather goods	...	...	...	...	11	0.9	2.5	1.4	4.0	13.0	7.5	12
Meat markets	0.9	3.6	0.9	5.2	62	0.7	4.6	1.3	3.0	20.0	6.5	12
Millinery	1.3	5.2	1.3	6.6	23	0.8	4.0	1.9	3.5	20.0	6.8	15
Music and radio	1.1	4.4	1.2	5.3	19	0.2	2.7	1.1	4.0	12.0	7.0	12
Shoes	1.0	4.0	1.2	5.8	34	0.4	3.2	1.6	1.0	14.0	6.6	15
Stationery	1.0	4.0	0.9	4.3	27	0.2	2.4	1.2	2.0	11.0	5.5	12
Variety	...	...	...	...	11	0.8	2.0	1.4	3.0	12.0	7.3	15
Women's accessories	...	...	...	...	27	0.3	7.0	1.8	3.0	32.0	8.4	15
All stores	1.2	4.8	1.2	5.7	995	0.2	7.0	1.3	1.0	32.0	6.6	..

Readings were taken at counter level. The values given as minimum and maximum represent the average of the readings in the poorest and best illuminated stores and not individual stations.

In those stores with lighted cases or counters an average of 330 watts per store was used for this purpose. The average number of outlets per store was ten and the watts per running foot of case 22. About 18 per cent of the cases were lighted by individual glass or metal reflectors suspended above, while the remaining 82 per cent used standard showcase lighting equipment largely of the trough type.

Many pendent lamps in show windows

It was found that 40 per cent of the stores had open back windows usually lighted by the same type of general equipment as used in the store, hung fairly low in the window. This was almost invariably the case in grocery and clothing repair stores and barber shops. In 30 per cent of the establishments the windows were inclosed with glass at the back, notably the bakeries, confectionery, delicatessen, meat markets, grocery and meat, eating places, drug and jewelry stores. In many instances these also were illuminated by general lighting fixtures hung low in the window. The remaining 30 per cent were of the "boxed in" or solid background type.

The vacuum "Mazda" lamp has no place in the picture as far as store installations are concerned. The popular size of lamp for general lighting of store interiors is the 200-watt, and as a grand average we found the following order of popularity:

Wattage	Per Cent	Wattage	Per Cent
75	2.3	200	35.0
100	10.1	Above 200	11.3
150	18.1	Below 75	32.2

The 100-watt and the 150-watt lamps appear to be the popular sizes used in the windows and on the average the order of popularity is as follows:

Wattage	Per Cent	Wattage	Per Cent
75	6.4	200	20.4
100	35.8	Above 200	1.6
150	32.5	Below 75	3.3

Although for the last seven years the inside-frosted lamp has been standard in the 100-watt size, it appears that about half the merchants still insist on the clear lamp for their windows. In the 75-watt size over 60 per cent were of the clear type.

We have found it most interesting to make a comparison between the amount of wattage used in the store proper and that used in the shop-windows for the various types of small establishments. This should give some index of the value that different classes of merchants attribute to their windows.

In the wearing apparel stores a large proportion of the available area is devoted to the windows, even though the store is in itself quite small. The housefurnishings stores are generally large and wide with the windows occupying nearly the entire frontage. The food stores and other establishments, such as barber shops, clothing repair, florist, etc., generally have open-back windows with hanging equipment smilar to that in the store, as pointed out before. These figures certainly indicate that window lighting offers an important field and one upon which the lighting interests can well afford to spend considerable time and effort.

Class of Store	Average Watts in Sales Area	Average Watts in Window	Class of Store	Average Watts in Sales Area	Average Watts in Window
Wearing apparel	908	2,195	Others	618	650
Housefurnishings	887	1,420	Average of all stores	780	1,035
Food	810	656			

Luminous ceiling boxes illuminate this shop

A progressive electrical and radio repair shop (15x30 ft.) lighted by luminous boxes of flashed opal glass mounted on the ceiling to form a geometrical pattern. Eight units with four 40-watt Mazda lamps in each are used in this installation. Average illumination is approximately 12 ft.-candles.

The problem of supplanting the large percentage of general lighting fixtures found in show windows with more suitable equipment may resolve itself into the matter of more widely exploiting the several types of comparatively inexpensive sets of window-lighting equipment which have recently been placed on the market. As these consist of a group of individual reflectors mounted in standard lengths and wired for plugging into a window outlet, they may be placed in the window with little or no installation cost. This would largely do away with the merchant's objection to high first cost and installation charges and should serve as a basis for excellent window illumination in the future.

While the subject of time switches was not investigated as thoroughly as it might have been, it is believed that these will not be found in more than 3 or 4 per cent of the installations. Selling the idea of using these to control the window lighting and signs should make it possible to obtain many more good installations and to increase the lighting companies' revenue, to say nothing of the increased advertising advantages to the merchant.

A large number of the merchants appear to be enthusiastic about obtaining high intensities of light upon at least part of the merchandise in their stores, but are unwilling to provide the necessary wattage to obtain a high level throughout the whole interior. Where the installation employs crystal bottom or open fixtures, hung about 7 ft. above the floor, the store owners seem to be well pleased with the 20 or 30 ft.-candle levels provided in small spots on the counters. For this reason it appears that it might be desirable to exploit some types of equipment which, when properly installed, will direct a relatively large amount of light evenly over the counters or shelves and at the same time provide fair general lighting. This might be accomplished either by new types of general lighting fixtures or by supplementing the general illumination with special display lighting units.

Every one is, of course, interested in obtaining the most for his money. We believe that most store managers can be easily convinced of the fact that it is to their advantage to burn good lamps of high efficiency rather than insisting on long-life lamps with a considerable waste of electrical energy. In this survey one large chain of grocery stores was found which made a standard practice of burning lamps five volts over rated voltage in all its properties in order to get a whiter light and more light for the money.

▼

Reduced Mine Accidents With Better Lighting

"While definite figures are not available, it seems probable that approximately 35 per cent of the underground accidents in mines of the United States are caused by inadequate and improper illumination," declares* W. C. Owings, associate mining engineer, U. S. Bureau of Mines. The greatest number of accidents occur about 11 a.m. and 2 p.m., regardless of the type of cap lamp used by miners, but the accident peaks are not so pronounced where electric cap lamps are worn, even where relatively dim or older types of electric cap lamps are used.

Comparisons of accidents were recently made in two mines of the same company in which carbide cap lamps had been replaced by electric cap lamps. As far as could be determined little change had been made in safety practices between the corresponding six-month periods compared. The man-hours of exposure were about 400,000 when carbide lamps were worn and 474,200 when electric cap lamps were used. The number of lost-time accidents per 1,000,000 man-hours with carbide lamps was 165 and with electric lamps 110, or a decrease of 33.6 per cent. The number of days lost per 1,000 hours worked was 43.5 with carbide lamps and 4.37 with electric, or a decrease of 90 per cent. The latter figure may be a little severe on open lamps because each fatality is charged as 6,000 lost days and permanent disabilities received a relatively high rate. If the premium ratings for the two fatal and three permanent injuries incurred during the use of open lamps are removed, the decrease in lost time with electric lamps was 44.8 per cent and the decrease in number of accidents 21 per cent (not considering difference in man-hours).

Mr. Owings expresses the belief that these figures are fairly representative of the relative safety of open and closed lights in mines so far as ordinary accidents are concerned. In addition, no mine fires or explosions have been caused by permissible electric cap lamps, while scores have been caused by open lights. The possible saving in suffering as well as the greater economy of properly controlled lighting is worthy of the consideration of every mining company executive, he emphasizes.

**Excerpts from paper before Illuminating Engineering Society.*

Double Street Lighting and Avert Traffic Casualties

By RICHARD E. SIMPSON*
Travelers Insurance Company, Hartford, Conn.

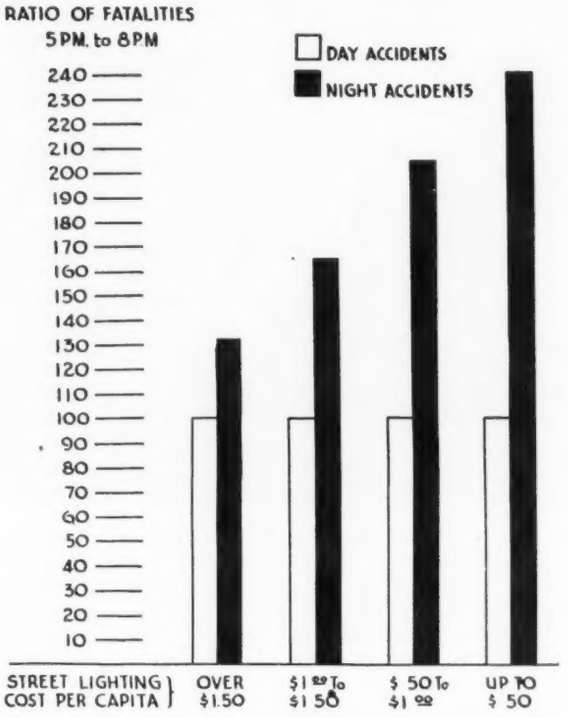
1. If the money represented by the economic loss from night-time traffic accidents were to be spent on street lighting it would bring about nearly a twofold increase in street lighting expenditure and a fourfold increase in the amount of illumination and would eliminate the great majority of night-traffic accidents now attributable to lack of light.
2. Cities spending $1.50 or more per capita in street lighting receive proportionate benefits, while those cities spending less than $1.50 per capita suffer losses in excess of the saving effected.

ITEM 1 was concluded from a 1931 survey of the correlation between traffic fatalities and street-lighting intensities in 46 cities. Item 2 is the conclusion of a 1932 survey embracing five times as many cities, the total population of which is more than 40,000,000.

Review of the automobile accident returns on a nation-wide basis for the year 1932 discloses the following pertinent facts: There was a 7 per cent reduction in gasoline consumption, an 8 per cent reduction in auomobile registration, a 13.3 per cent decrease in automobile accidents and a 13.5 per cent decrease in fatalities from automobile accidents. But there was an actual *increase* of 1.3 per cent in the number of fatalities per accident and an *increase* of 2.2 per cent in the number of injuries per accident. Better engine performance and improved road surfaces have brought about a higher average speed. As every one knows, the higher the speed attained by a moving object the greater the resulting damage when it collides with another object.

A survey of 46 American cities for the year 1931 had shown that the number of automobile accident fatalities between the hours of 5 p.m. and 8 p.m. was 117 per cent greater during the four winter months (October, November, December and January) than the number of fatalities in the same three-hour period during the summer months (May, June, July and August). This notwithstanding the fact that automobile traffic, as measured by gasoline consumption, was 25 per cent heavier during the four summer months than during the four winter months.

A similar survey for 1932 embraced 227 cities ranging in size from 20,000 to more than 7,000,000 inhabitants and having a combined population of 40,669,000. The study covers the same three-hour period (from 5 p.m. to 8 p.m.) and the same four summer and winter months. The first half of this three-hour period witnesses the great homeward movement of workers, shoppers and pleasure-seekers, while the second half sees the outward travel to keep social engagements and to find diversion of other kinds. All told, this brings about a daily movement of more than fifty million human beings and vehicles in the United States, while the total for the eight months is well over twelve billion.



Darkness the important factor

Some of the chief differences between the two seasons are weather conditions, traffic density and visibility. The available statistics indicate that not more than 10 per cent of the winter months' accidents can be attributed to bad weather and poor road conditions. We have already brought out the fact that gasoline consumption is 25 per cent less during the winter months, and presumably automobile traffic is correspondingly lighter. This may tend to increase pedestrian traffic, but hardly enough to have a material influence on the accident rate. The outstanding difference of this three-hour period, however, is the fact that in the summer months natural light provides full visibility, while in the winter months the field of view is restricted to the area effectively illuminated by artificial street lights and by the headlights of automobiles, and many of these headlights are disturbing factors because, being improperly adjusted and focused, they cause dangerous glare.

Excerpts from paper "The Life-Preserving Rôle of Good Street Lighting," presented before the 27th annual convention of the Illuminating Engineering Society, Lake Delavan, Wis. August 28-31, 1933.

Table I—Low Street-Lighting Budgets Mean Economic Loss

	1931 46 Cities	1932 227 Cities
Population	25,355,000	40,669,000
Cost of street lighting	$27,199,000	$44,718,776
Cost of street lighting per capita	$1.06	$1.09
Automobile fatalities 5 p. m. to 8 p. m., summer months	366	505
Add 10 per cent for winter weather and road-surface conditions	36	50
(a) Number to be expected in winter	402	555
(b) Number actually observed in winter	794	1,025
Number due to insufficient light (b-a)	392	470
Non-fatal automobile accidents 5 p. m. to 8 p. m., summer months	9,516	13,130
Add 10 per cent for winter weather and road-surface conditions	951	1,313
(a) Number to be expected in winter	10,467	14,443
(b) Number actually observed in winter	20,644	26,650
Number due to insufficient light (b-a)	10,177	12,207
Excess economic loss winter over summer	$31,707,000	$37,211,000
Ditto, per capita	$1.25	$0.91

The general results of the survey are shown in Table I, and for convenience in comparison the 1931 results are included. It will be noted that the relative results are similar for the two years, notwithstanding the fact that the country in general had a lower mortality rate from automobile accidents in 1932.

When lighting costs are cut fatalities increase

As the per capita street-lighting costs go down the winter months' accidents (that is, the night-time accidents) tend to increase in number (see chart). Probably the most significant feature of the survey is brought out by a comparison of the returns from cities reporting for both years. Of the 46 cities reporting in 1931, there were 42 which reported in 1932, and of these 42 cities 22 increased their street-lighting budgets in an amount equal to $0.093 per capita, while twenty cities reduced their street-lighting budgets in an amount equal to $0.19 per capita. As seen from Tables II and III the 42 cities experienced a 7.6 per cent increase in evening fatalities, whereas the 22 which increased their lighting budgets had a decrease of 23.8 per cent.

A word of explanation is due regarding the figures given for the total fatalities and the total number of accidents during the hours of darkness. For a number of years the Travelers Insurance Company has gathered automobile-accident statistics which in the aggregate cover several million accidents. Each year the returns show that for every fatal automobile accident there are 26 automobile accidents in which there are no fatalities. With the number of fatalities known, we have used the multiple 26 to arrive at the total number of accidents quoted.

These same statistics give the hours of occurrence of automobile accidents, and each year shows an increase in the percentage of night-time accidents. In 1932, 45.1 per cent of the accidents and 53.4 per cent of the fatalities occurred at night-time. During the hours of daylight there were 409,100 accidents in which 13,500 persons were killed, or 32 fatalities for every 1,000 accidents. Contrast this with the night-time record of 336,200 accidents and 15,500 deaths, or 46 deaths per 1,000 accidents. The death rate per accident is thus shown to be 43.7 per cent higher at night time than by day.

A few of the cities which reported for the 1932 survey keep their records on a month-and-hour chart, so that it is a simple matter to ascertain the total number of fatalities during the night hours for the whole year. An analysis of the returns from these particular communities shows that the percentage of night-time fatalities is almost identical with that for the nation as a whole and therefore this percentage was used in determining the total number of night-time fatalities in the 42 cities.

One group of cities with low per capita street-lighting costs (that is, cities that might reasonably expect considerable benefit from better street lighting) actually does

Table II—22 Cities with Increased Street-Lighting Budgets Save by Spending

Population—22 cities	15,358,000
Amount of increase in street-lighting costs	$1,429,321.00
Per cent increase 1932 over 1931	11
Increased cost per capita	$0.093
Automobile fatalities 5 p.m. to 8 p.m., winter months, 1931	437
Automobile fatalities 5 p.m. to 8 p.m., winter months, 1932	327
Decrease, 1932 from 1931	110
Per cent decrease	25.1
Automobile fatalities during hours of darkness, entire year 1931	1,648
Automobile fatalities during hours of darkness, entire year 1932	1,255
Decrease, 1932 from 1931	393
Per cent decrease	23.8
Total automobile accidents during hours of darkness, 1931	44,496
Total automobile accidents during hours of darkness, 1932	33,885
Decrease, 1932 from 1931	10,611
Economic saving	$31,833,000
Economic saving per capita	$2.07

Table III—20 Cities with Decreased Street-Lighting Budgets Lose by Saving

Population—20 cities	5,618,000
Amount of decrease in street-lighting costs	$1,101,389.00
Per cent decrease	14
Decreased cost per capita	$0.19
Automobile fatalities 5 p.m. to 8 p.m., winter months, 1931	184
Automobile fatalities 5 p.m. to 8 p.m., winter months, 1932	198
Increase, 1932 over 1931	14
Per cent increase	7.6
Automobile fatalities during hours of darkness, entire year 1931	641
Automobile fatalities during hours of darkness, entire year 1932	689
Increase, 1932 over 1931	48
Per cent increase	7.4
Total automobile accidents during hours of darkness, 1931	17,307
Total automobile accidents during hours of darkness, 1932	18,603
Increase 1932 over 1931	1,296
Excess economic cost 1932 over 1931	$3,888,000
Excess economic cost per capita	$0.69

Table IV—More Light, Less Accidents

22 Cities with Increased Street-Lighting Budgets

22 Cities	Average per Capita Cost 1931	1932	Change	Fatalities 5 p.m. to 8 p.m. 1931	1932	Decrease	Per Cent Decrease
8	$.75	$.81	+8%	217	145	—72	33.1
11	1.15	1.29	+12%	182	148	—34	18.6
3	1.82	1.86	+2.2%	38	34	—4	10.5

20 Cities with Decreased Street-Lighting Budgets

20 Cities	Average per Capita Cost 1931	1932	Change	Fatalities 5 p.m. to 8 p.m. 1931	1932	Decrease or Increase	Per Cent Decrease or Increase
10	$.84	$.78	—7.1	53	85	+32	+60
9	1.36	1.16	—14.7	70	51	—19	—27
1	1.68	1.59	—5.3	61	62	+1	+1.6

benefit to the extent of a 33 per cent reduction in fatalities by an increase of only 8 per cent in per capita street-lighting cost. Conversely, another group in the same class (and therefore least able to afford a reduction in street lighting) experienced a 60 per cent increase in fatalities when they reduced their per capita street-lighting cost 7.1 per cent (see Table IV).

Twenty-two cities with an average increase of only 11 per cent in their street-lighting costs brought about a 25.1 per cent *reduction* in the number of night-time traffic fatalities, whereas twenty cities with an average decrease of 14 per cent in their street-lighting costs experienced a 7.6 per cent *increase* in their night-time traffic fatalities. This latter becomes much more significant when we recall that the country as a whole had a 13.5 per cent better traffic-fatality record in 1932 than in 1931. Since "the proof of the pudding is in the eating" we have proof in this record, even though the "pudding" is only a homeopathic portion.

Sign Survey Shows Basis for Revenue Recovery

By H. H. WEBB

Illuminating Engineer
The Dayton Power & Light Company

IN an effort to recapture that part of the electric sign load which has been reduced during the last three years we considered it advisable to make a careful study of present sign-operating conditions. This survey has made it possible for us to direct our efforts intelligently, and we have made good progress in regaining this load. We are emphasizing to the merchant the fact that he has already made a large investment in a sign which with a coat of paint, or perhaps just a good cleaning, can be restored to

Sign Maintenance Survey -- Summer 1933

Name _____ Address _____
Business _____ Salesman _____

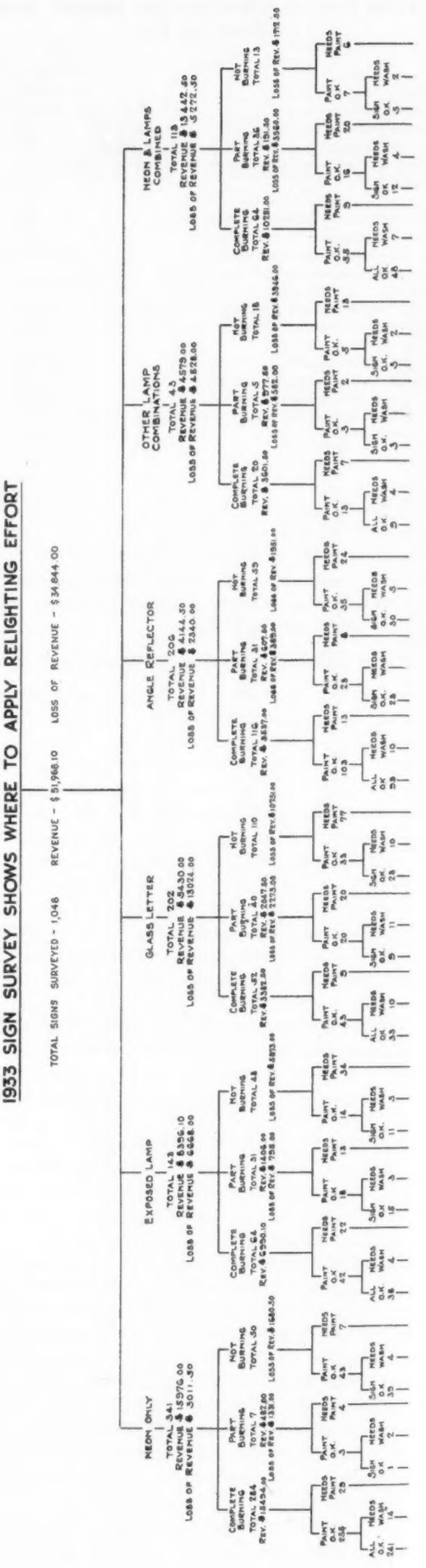
Load
Neon_____feet
Exposed lamps: _____lamps of _____watts each
_____lamps of _____watts each
Glass letter _____lamps of _____watts each
Angle Reflector_____lamps of _____watts each

Total normal load_____watts. Present load as now operated_____watts
Load to be recovered_____watts, worth $ _____ annual revenue

Time switch ☐ Flasher ☐ Good condition?_____

Service required
Paint_____ Wash_____ Relamp_____
Increase_____watt lamps in _____ to _____ watts.
Annual cost of complete maintenance, except cost of lamps $_____

Prospect for_____Sign_____watts


1933 SIGN SURVEY SHOWS WHERE TO APPLY RELIGHTING EFFORT
TOTAL SIGNS SURVEYED - 1,046 REVENUE - $ 51,968.10 LOSS OF REVENUE - $ 34,844.00
NEON ONLY
EXPOSED LAMP
GLASS LETTER
ANGLE REFLECTOR
OTHER LAMP COMBINATIONS
NEON & LAMPS COMBINED

Recovery of Revenue Prospects for 1,048 Signs

Type of Sign	Number of Signs	Per Cent of Total Number	Present Revenue — Dollars	Present Revenue — Per Cent	Lost Revenue — Dollars	Lost Revenue — Per Cent	Per Cent of Full Load
Neon only	341	33	$15,976	31	$3,011	9	84
Exposed lamp	143	14	8,396	16	6,668	19	56
Glass letter	202	19	5,430	10	13,024	37	29
Angle reflector	206	19	4,145	8	2,340	7	64
Other lamp combinations	43	4	4,579	9	4,528	13	50
Neon and lamp combination	113	11	13,442	26	5,273	15	76

its original efficiency and will operate for just a few cents an hour.

The survey of more than 1,000 electric signs showed a present annual revenue of $51,968, which, however, is $34,844 short of the attainable value because of partial use or complete idleness of some of the signs. The poorest showing was found to exist for the glass letter signs, which, while representing 19 per cent of the total number, carried only 10 per cent of the active revenue; due, however, to the high portion out of use, this class showed a chance to recover 37 per cent of the missing revenue. Neons constitute one-third of all signs surveyed and showed a smaller chance, proportionately, to recover lost revenue than any other type. They bring in 31 per cent of the present revenue and would contribute only 9 per cent of the recovered revenue if all could be induced back into service.

The study was also extended to the general maintenance and operating status of the various types of signs. Less than half (462) could be given a perfect score. About 30 per cent were in need of paint (317) and 9 per cent in need of washing (96). Sixteen per cent (174) would not require any such outlay to get them back into service —only sales effort applied to convince the owner of the economic attention value of light as a business index and label. In addition to the 462 operating fully and well maintained there were 138 which were operating in full but in need of maintenance, either paint or washing. Just 600 (or 57 per cent) were bringing in full revenue.

Value in such surveys rests in ferreting out the hindrances to full use of installed sign equipment. Once these hindrances are known in their relative magnitudes it is readily possible to organize the sales effort most effectively to bring back into service those (in this case 43 per cent) which were neither fully active nor well maintained. Out of the 1,048 signs there were 137 in a good state of maintenance but not burning. There were, of the 298 not burning, 161 that needed paint. In general, it can be expected that those owners who have been financially unable or too careless to maintain their signs in good condition would be less likely to respond to a relighting suggestion than those who had kept their signs in good order.

The revenue was calculated at $100 per year per kilowatt.

▼ ▼ ▼

Scholarship Improved by Adequate Light

Tangible evidence of the value of automatically controlled adequate lighting in schools has been obtained from a three-year test in an Alabama school. Two rooms almost identically alike as to window exposure, size, seating arrangements, blackboards, etc., were selected. The same grade of students were taught in each room by the same methods. The pupils had been subjected to tests of mental ability and achievement and equally divided between the two rooms on this basis. Two teachers were assigned to do departmental work in both classes.

One difference existed between the two rooms—room A had two 150-watt ceiling type prismatic glass-inclosing lighting fixtures controlled by a wall switch; room B had four 300-watt totally indirect fixtures controlled by a photoelectric relay. With natural light excluded, room A had an artificial illumination on the desk tops ranging from 6 ft.-candles to 2 ft.-candles (nearest the walls), whereas room B had 12-14 ft.-candles on the tops of all desks. Furthermore, room B was automatically provided with artificial illumination whenever natural lighting dropped below 12 ft.-candles on the desks farthest from the windows.

During the first year a photoelectric relay was placed on the teacher's desk, but during the second year it was placed above the blackboard in a corner of the room facing the windows. The third year a "photronic" relay was installed above the blackboard behind the teacher's desk.

During the year 1930-31 the ratio of failures to enrollment was nearly three times as great in room A as in room B. The following year the ratio was about 3.7:1. During 1932-33 the ratio was again 2:1. In the automatically controlled room the artificial lights were turned on 32.6-28.3 per cent of the time, while in the manually controlled room they were used 8.5-14.7 per cent of the time.

Of equal importance was the teachers' testimony. They reported: "The children in room B were more alert, cheerful and attentive, while those in room A seemed restless and sleepy on dark days and were harder to teach."

F. C. Albert, Alabama Power Company, who reported* these tests, concluded:

"While no definite value can be placed on the intangible benefits to the children and teachers in the way of increased knowledge and improved and preserved vision, the test developed that controlled classroom lighting will pay for itself in dollars and cents. The electric energy consumed in each room was metered and the cost of the additional electricity averaged $24.33 per school year for the three years. The annual cost of educating each pupil in this school was approximately $28 for actual operating expenses."

**Abstract of paper presented before the Illuminating Engineering Society.*

Light Gives the Garden Another Beauty at Night

"A garden is a lovesome
thing, God wot!
Rose plot,
Fringed pool,
Ferned grot,
The veriest school
of peace—"
—Thomas Edward Brown

In the sunken garden, concealed in the shrubbery and in the pool, were eight 25-watt lamps in aluminum reflectors. No illumination source was visible, only apparent was the general suffusion of light.

Pictures, furnished by Miss M. Hartnacke, Consumers Power Company, were taken at Kent Garden Club Show, Grand Rapids, Mich.

High light and emphasis on groups of flowers along the border were supplied by flower-shield units, each with a small lamp.

Convenience Control of Residence Lighting

By J. C. RUNYON
*Consulting Engineer, New York City**

A wiring scheme which permits portable master control of all lighting in any room to be connected at a variety of positions to conform with rearrangements of furniture or desires of the occupant.

EFFORTS of many organizations on adequate wiring have resulted in marked improvement in residence wiring, especially in kitchen, laundry and other service portions, obtaining quite a satisfactory standardization. Master portions, such as living rooms, libraries, bedrooms, etc., have remained largely a matter of conjecture, due perhaps to the confusion of trying to build in for every whim of lighting.

No plan can be perfect, but the editors of the ELECTRICAL WORLD (August 5, 1933, "Meet the lady's dream of mastered lighting") summed up the general requirements of the master portion lighting in questions so pertinent as to clarify a method that promises ready acceptance. These questions are so well put as to allow sequence treatment in the solution.

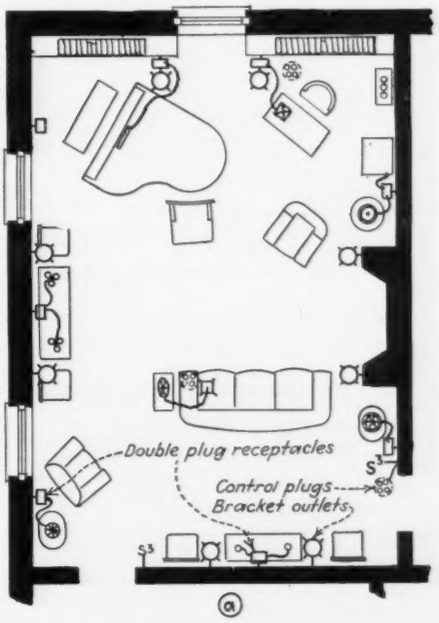
"Why must there be so many places to go to turn on the switches?" Right here we get the picture of a lot of brackets, or table lamps fed from plugs, without switch control. If all plugs are put on switch control the reverse happens; when the phonograph, radio, vacuum cleaner or other device is used during daylight, all lamps come on with the switch.

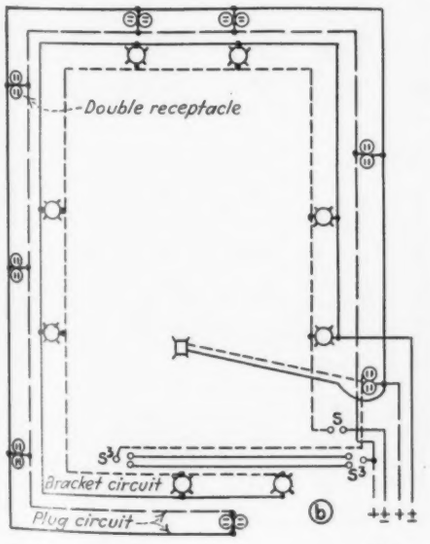
This condition has been overcome by a few during the past few years by means of a double plug at each location having separate terminals and a three-wire run: (1) neutral, (2) live solid tap and (3) switched. Table lamps are plugged into the switched side and devices plugged into the live side. So far this plan seems to have been used only by a few engineers and the better-informed contractors.

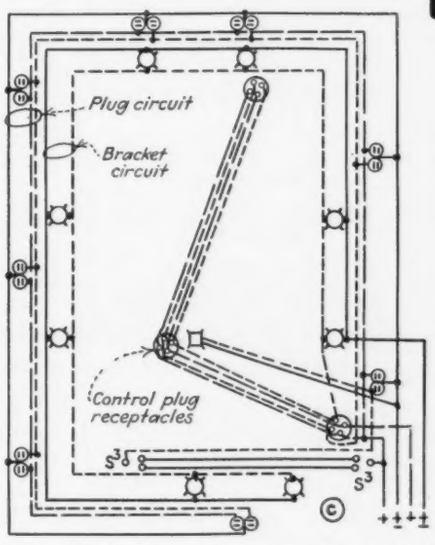
"Why can I not have three levels and tones of general illumination?"

Plugs have come into such general use that many have entirely abandoned ceiling and bracket lights. The

(a) Application in a living room.
(b) Ordinary method of wiring, showing three-way switches to control central receptacle and one wall receptacle, single switch to control all brackets, but no switches on receptacles around walls.
(c) Convenience control method of wiring. Three-way switches are retained for control receptacles and one wall receptacle. Portable switches may be used at any one of the three switch receptacles to control brackets and one side of each receptable around walls.
(d) Schematic diagram of new method of wiring. Three-way switches not shown.







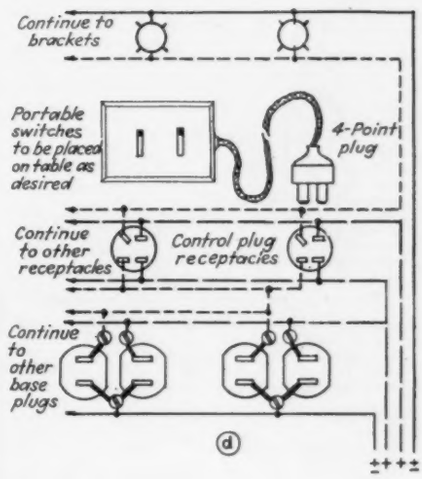


Fig. 1—Convenience control of residence lighting

*18 E. 48th Street.

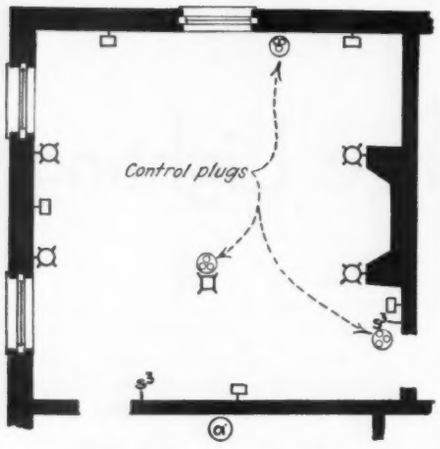
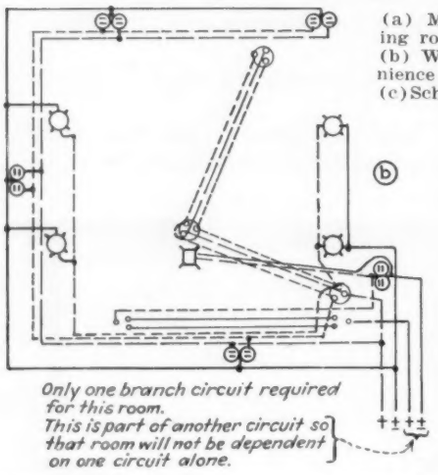
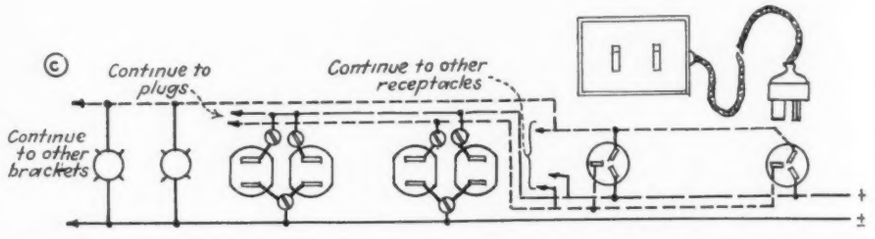


Fig. 2—Modified plan for smaller room brackets and plugs on one circuit


b
Only one branch circuit required for this room.
This is part of another circuit so that room will not be dependent on one circuit alone.

(a) More modest living room.
(b) Wiring for convenience control.
(c) Schematic diagram.



writer knows of several fine houses in which rooms have no fixture outlets, plugs only being relied upon. The occasional need of brilliant light in a living room or similar room demands that several brackets be used. Most rooms have more than one entrance, and for this reason a fixed three-way switch control should be provided at the most used doors. If this three-way controls a low lighting, such as one or two lamps, it serves the double purpose of light for getting about the room and low illumination for times of repose. The second degree of illumination is obtained by a switch on the lighting half of the plugs and the highest illumination by the switch on the brackets. (Brackets are named here because the tendency has been away from ceiling lights in living rooms.) The locations of the three-way switches are fixed at the entrances without question.

The means suggested in this new plan for other level lighting provides switch control not limited to a fixed location, such as the principal entrance, but a multiplicity of locations. Fig. 1a shows a fair-sized living room with a normal amount of brackets and plugs. Fig. 1b shows wiring for this room with switch control for

Costs of Municipal Street Lighting in

Note—A large part of the savings indicated in table below over cost for 1931 is due to reduction in salaries of employees.

	1,000-Cp.—20-Amp. Lamps			600-Cp.—20-Amp. Lamps			400-Cp.—6.6 Amp. Lamps		250-Cp. 6.6-Amp. Lamps	100-Cp. 6.6-Amp. Lamps
	Aerial System	Underground System	Total	Aerial System	Underground System	Total	Aerial System	Underground System	Underground System	Underground System
Average number of lamps...	6,985	1,348	8,333	22,285	3,000	25,285	183	893	32,319	21,075
Operation and maintenance:										
Electrical energy	$131,548.55	$25,386.84	$156,935.39	$251,896.50	$33,910.19	$285,806.69	$1,538.25	$7,506.33	$179,073.93	$50,111.26
Substation expense	24,533.58	4,068.08	28,601.66	58,289.76	7,766.88	66,056.64	128.18	1,940.96	48,377.45	19,299.71
Labor-renewals, cleaning, patrolling	20,303.78	3,918.32	24,222.10	64,777.32	8,720.30	73,497.62	531.96	2,595.75	85,781.05	55,953.56
Incandescent lamps	13,269.87	2,560.89	15,830.76	42,267.04	5,689.98	47,957.02	676.57	3,301.49	62,344.02	25,044.42
Lamp fixture repairs and renewals	4,829.61	932.04	5,761.65	24,181.90	3,255.36	27,437.26	93.53	456.43	9,038.81	11,341.87
Lamp globes, signal glass, etc	1,284.05	247.80	1,531.85	7.19	.97	8.16	15.26	74.46	46,585.78	27,739.90
600-volt lead-covered cable in conduit	.....	3,856.84	3,856.84	.....	.....	.....	.....	.....	.....	.....
600-volt jute-covered cable	.....	.....	.....	.....	.....	.....	.....	2,046.56	45,145.07	27,887.54
Duplex lead-covered cable	.....	225.89	225.89	.....	19.02	19.02	.....	.....	.....	.....
5,000-volt arm'd pky. cable	.....	.....	.....	.....	.....	.....	.....	20.84	754.45	491.97
5,000-volt S. C. L. C. cable	.....	816.20	816.20	.....	1,816.46	1,816.46	.....	540.70	19,568.78	12,760.67
Transformer maintenance	7,044.69	1,359.52	8,404.21	.....	100.85	100.85	184.57	900.63	32,595.18	21,255.09
Conduit system	3,574.54	592.75	4,167.29	8,492.85	1,131.64	9,624.49	18.65	282.77	7,048.74	2,812.04
Lamp post maintenance underground system	.....	181.62	181.62	.....	3,006.20	3,006.20	.....	577.67	18,938.21	19,837.17
Aerial maintenance	26,925.30	.....	26,925.30	85,841.85	.....	85,841.85	.....	.....	.....	.....
City-owned automobile	8,181.93	1,550.77	9,732.70	18,651.44	2,285.97	20,937.41	180.38	631.05	19,135.70	9,365.00
Administrative overhead	16,742.61	3,173.32	19,915.93	38,166.30	4,677.74	42,844.04	369.10	1,291.31	39,157.15	19,163.52
Total	$258,238.51	$48,870.88	$307,109.39	$592,572.15	$72,381.56	$664,953.71	$3,736.45	$22,166.95	$613,544.32	$303,063.72
Cost per lamp	$ 36.96	$ 36.25	$ 36.85	$ 26.59	$ 24.13	$ 26.30	$ 20.41	$ 24.80	$ 18.98	$ 14.38
Estimated Additional Charges:										
Ground rent	$ 23.57	$ 4.47	$ 28.04	$ 53.73	$ 6.59	$ 60.32	$ .52	$ 1.82	$ 55.13	$ 26.98
Office rent	650.45	123.28	773.73	1,482.75	181.73	1,664.48	14.34	50.17	1,521.25	744.50
Taxes	32,387.69	13,571.33	45,959.02	67,929.87	20,285.77	88,215.64	392.84	2,185.33	72,152.44	47,954.93
Depreciation	104,618.67	43,838.10	148,456.77	219,426.98	65,527.08	284,954.06	1,268.94	7,059.04	233,066.84	154,903.95
Interest	51,490.73	21,576.03	73,066.76	107,996.54	32,250.81	140,247.35	624.54	3,474.28	114,709.70	76,239.90
Legal and other services	195.13	36.98	232.11	444.83	54.52	499.35	4.30	15.05	456.37	223.35
Total	$189,366.24	$79,150.19	$268,516.43	$397,334.70	$118,306.50	$515,641.20	$2,305.48	$12,785.69	$421,961.73	$280,093.61
Charges per lamp	$ 27.11	$ 58.71	$ 32.22	$ 17.82	$ 39.43	$ 20.39	$ 12.59	$ 14.32	$ 13.05	$ 13.29
Complete cost per lamp	$ 64.07	$ 94.96	$ 69.07	$ 44.41	$ 63.56	$ 46.69	$ 33.00	$ 39.12	$ 32.03	$ 27.67

low light and for brackets, but not for plugs. This has been accepted as rather complete wiring. Fig. 1c shows wiring for this room based on this new plan, and Fig. 1d a schematic diagram with portable switch and its plug. The switch wires are extended to receptacles placed at a number of selected locations.

One of the greatest pleasures of most women is the rearrangement of furniture. Today a favorite seat is at one location, tomorrow at another. With a few switch plugs strategically placed the portable unit may be shifted with the furniture as easily as the table lamp. Other advantages are that in planning a room one location may be thought to be the favorite, such as the sofa; whereas if a literary or similar tendency should develop a desk may become of first importance, and the switch unit shifted to the plug control near the desk. The switch unit may be twin (two switches) or triple (three switches) of only one-gang size and placed in a box $2\frac{3}{4}$ in. wide by $4\frac{1}{2}$ in. long by $1\frac{1}{2}$ in. deep. Box and plate may be finished in walnut, ebony, silver or otherwise, as desired. A multiple-conductor approved silk cord and polarized plug complete the portable unit. (All material is now stock except the portable control box.)

One of the control plug receptacles should always be placed at the principal entrance, as this may prove more desirable at times and is always safe. The switch unit, being equipped with cord and plugged in at the base, does away with objectionable spots which would occur if the switch unit were connected at usual switch height on the wall and brings the unit to a more useful location. In rooms of this nature all plugs for lights and devices should be placed in the baseboard, and not above the base, where they are unsightly.

And now comes the question, "Why must my architect feel impelled to caution me about the cost of wiring?" How tragically true this is! It is probably because the electrical industry is the youngest of mechanical trades, and the erring ways in its growth are not erased by generations, as in other lines. In their aim to protect clients from a lot of useless gadgets many architects have trimmed wiring to less than bare necessities. Nor are architects entirely to blame. The writer has many times prepared conservative plans and specifications only to have some electrical contractor go to the general contractor or owner and offer to do a job "just as good and have it approved by the Underwriters" if he be permitted to do "thus and so." Not blaming the Underwriters, they have troubles enough.

But why trim? It is safe to say that adequate wiring in residence work amounts to only 5 per cent of the cost of the building. A half-way job might save $1\frac{1}{2}$ per cent. Again, why trim?

Now, just how much will the convenience here add to the cost? An estimate can only be comparative, but assuming a suburban district, BX wiring and good workmanship the cost of the wiring for the living room illustrated in Fig. 1a may be as follows:

	Material	Labor	Total
With one set of three-way switches and one fixed switch on brackets.....	$38	$57	$95
With one set of three-way switches, one fixed switch on brackets and one fixed switch on half of all plugs.....	$41	$64	$105
With one set of three-way switches, three switch-control plugs and one twin-switch unit complete	$46	$70	$116

With the modified plan for a smaller room (Fig. 2a, b and c) these estimates may be reduced 25 to 30 per cent.

Carrying the plan to other rooms, the library may have brackets for occasional high light, the bedrooms a central outlet for low light for circulation, the master room a switch on hall lights for alarms; in the latter cases the switch plugs should be placed so as to be used on night tables with alternate positions of beds.

Chicago in 1932

100 Cp. 4-Amp. Lamps Underground System	Total Street Lights	Through Street Stop Signs	Traffic Signals	Total
4,925	93,013	645	Loop—285 Outlying—1,658	
$11,853.71	$ 692,825.56	$ 1,020.09	$ 54,702.41	$ 748,548.06
5,911.38	170,315.98	946.06	250.25	171,512.29
13,075.75	255,657.79	6,312.12	19,014.62	280,984.53
2,915.86	158,070.14	183.91	5,276.74	163,530.79
4,674.64	58,804.19	2,567.56	6,890.19	68,261.94
8,981.55	84,936.96	160.28	814.72	85,911.96
.....	3,856.84	.....	4,196.39	8,053.23
.....	75,079.17	.....	10.34	75,089.51
.....	244.91	4.90	123.19	373.00
8,870.82	10,138.08	.....	.....	10,138.08
.....	35,502.81	.....	.....	35,502.81
.....	63,440.53	626.39	11,889.43	75,956.35
861.27	24,815.25	137.84	36.46	24,989.55
13,974.76	56,515.63	2,543.52	511.45	59,570.60
.....	112,767.15	.....	.....	112,767.15
2,421.91	62,404.15	490.45	3,496.47	66,391.07
4,955.91	127,696.96	1,003.72	7,154.74	135,855.42
$78,497.56	$1,993,072.10	$15,996.84	$11,4367.40	$2,123,436.34
$ 15.93	.....	$ 24.80	$ 58.86	.....
$ 6.98	$ 179.79	$ 1.41	.....	$ 181.20
192.54	4,961.01	38.99	.....	5,000.00
10,572.22	267,432.42	1,163.05	.....	268,595.47
34,150.36	863,859.96	3,756.89	.....	867,616.85
16,807.96	425,170.49	1,849.07	.....	427,019.56
57.76	1,488.29	11.71	.....	1,500.00
$61,787.82	$1,563,091.96	$ 6,821.12	.....	$1,569,913.08
$ 12.55	.....	$ 10.58	.....	.....
$ 28.48	.....	$ 35.38	$ 58.86	.....

Flux-of-Light Method Unadaptable to Side-Wall Panels

When illumination is obtained from luminous panels in the side walls of a room from 44 to 73 per cent of the total area of the horizontal working plane receives less than average illumination, and the minimum illumination may range at least from 13 to 75 per cent of the average illumination. Such being the case, the usual flux-of-light method of design, based on utilization coefficients, is hardly permissible without important modifications, because it regards only the average illumination. Data on uniformity of illumination as well as on utilization coefficients, for various arrangements of luminous panels in the side walls were presented before the I.E.S. last week by H. H. Higbie and W. A. Bychinsky, showing at last the most important precautions to observe if uniformity of lighting is to be approached. They suggest that minimum rather than average illumination be designed for and that the ratio of this minimum to the lumens admitted per square foot of floor area is perhaps a better guide than the utilization coefficient.

Men of the Industry

WILLIAM T. CONLON, who has been connected with the Superheater Company, New York, in an executive sales capacity since 1929, has been appointed manager of that company's industrial department. Mr. Conlon will have charge of the design, manufacture and sale of Elesco superheaters for all types of boilers for public utility and industrial power plants. Prior to joining the Superheater Company Mr. Conlon was associated with the Utica (N. Y.) Gas & Electric Company.

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JOHN T. CROWLEY, for the past 35 years associated with Fred T. Ley & Co., Inc., Springfield, Mass., has organized the contracting firm of John T. Crowley Construction Company, Inc., with offices in Cambridge, Mass. Mr. Crowley is widely known in the New England public utility field because of previous work for the Boston Edison, Western Massachusetts and Tenney companies. His new organization will specialize in conduits, cell structures, pipe lines, foundations, steel erection and trackwork.

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ROBERT A. MONROE, since 1929 connected with the Aluminum Company of America as a specialist in hydro-electric engineering and transmission, has accepted a position with the U. S. Bureau of Reclamation at Denver. He will have charge of the structural and mechanical design of hydro-electric plants. Before his association with the Aluminum Company Mr. Monroe was affiliated for eighteen years with the Pacific Gas & Electric Company, where he was in charge of hydro-electric work. Mr. Monroe is a graduate of the University of California.

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MICHAEL T. FLYNN, manager of the Kansas City Power & Light Company at Ottawa, Kan., retired from active service September 1 after 33 years of continuous service. Mr. Flynn's connection with the electrical industry dates back to 1892, when he became identified with the New Orleans Railway & Light Company. His first connection with the Kansas City properties was as a meter tester in 1900 for the old Consolidated Electric Light & Power Company. He took an active part in the management of the Kansas division until 1926, when he was transferred to Texas with the Panhandle Power & Light Company. Subsequently he was assistant general manager of the Cimarron Utilities Company at Guymon, Okla., which, together with the Panhandle company, was owned by the Kansas City Power Securities Corporation. Later, when the property of the Municipal Power Transmission Company at Ottawa was acquired by the Kansas City Power & Light Company, Mr. Flynn was transferred there as local manager.

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Donald C. McClure Heads Central Illinois Utility

Donald C. McClure was recently elected president of the Central Illinois Electric & Gas Company, Rockford, Ill., succeeding Adam Gschwindt in the operation of the property, which was formerly a subsidiary of the Central Gas & Electric Company and is now controlled by

the Consolidated Electric & Gas Company and managed by Stone & Webster, Inc. At the Rockford headquarters and under Mr. McClure are handled all operations of Consolidated Electric properties in Illinois and northern Michigan.

After graduation in electrical engineering from Rensselaer Polytechnic Institute in 1913, Mr. McClure entered the employ of Henry L. Doherty & Company at Denver, Col., where, having completed the training school course, he was assigned to design and revamp the electrical generating and transmission system of the Denver Gas & Electric Light Company, now the Public Service Company of Colorado. He served as assistant superintendent and superintendent of the electric department of the Denver properties until 1924. In that year he was transferred to the St. Joseph (Mo.) Light, Power & Railway Company, another Doherty subsidiary, as general superintendent. Three years later Mr. McClure moved to Chicago to become operating vice-president of the Central Public Service Corporation. Following the reorganization of the Pierce group, among which was Central Public Service, Mr. McClure was carried over by the new régime and elected to his present position.

In the course of his public utility career Mr. McClure has been active in association work, being a past-president of the Rocky Mountain Division of the old National Electric Light Association.

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F. F. BRAND, who has been connected with the General Electric Company for a number of years, has been appointed assistant to the manager of the Pittsfield works in charge of engineering. Mr. Brand is a native of Sussex, England, and was educated in that country. Following graduation from Finsbury Technical College with the degree of electrical engineer, he entered the testing department of the British Thomson Houston Company. He then went to Pittsfield as a student engineer with the old Stanley Electric Manufacturing Company, a predecessor of the General Electric Company. In succeeding years he worked up through the engineering department and, previous to his new appointment, was executive engineer of the power transformer engineering department. Mr. Brand is a member of the American Institute of Electrical Engineers.

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DR. ARTHUR S. DEWING, professor of finance at the Harvard Graduate School of Business Administration, has resigned and will devote himself to independent writing on international finance and other economic topics. Dr. Dewing is well known in the public utility field for his work in acquiring and developing various power companies in the outlying districts of the White Mountains of New Hampshire. Formerly president of the Atlantic Public Utilities, Meredith Electric Light Company, Pemigewasset Electric Company, Goodrich Falls Electric Light Company and Salem (N. H.) Electric Light Company, he at present heads the Farmington Falls (Me.) Electric Light Company.

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OBITUARY

WILLIAM R. TURNER, safety director of the Metropolitan Edison Company, Reading, Pa., died recently, in his fifty-sixth year. For many years Mr. Turner was identified with safety work in Reading. He was employed for the past sixteen years by the Metropolitan Edison Company. Before his appointment to the position of safety director Mr. Turner had been connected with the engineering department. He was credited with devising many safety systems in the interest of the employees.